

U-20

RS-PCM
KEYBOARD

SERVICE NOTES

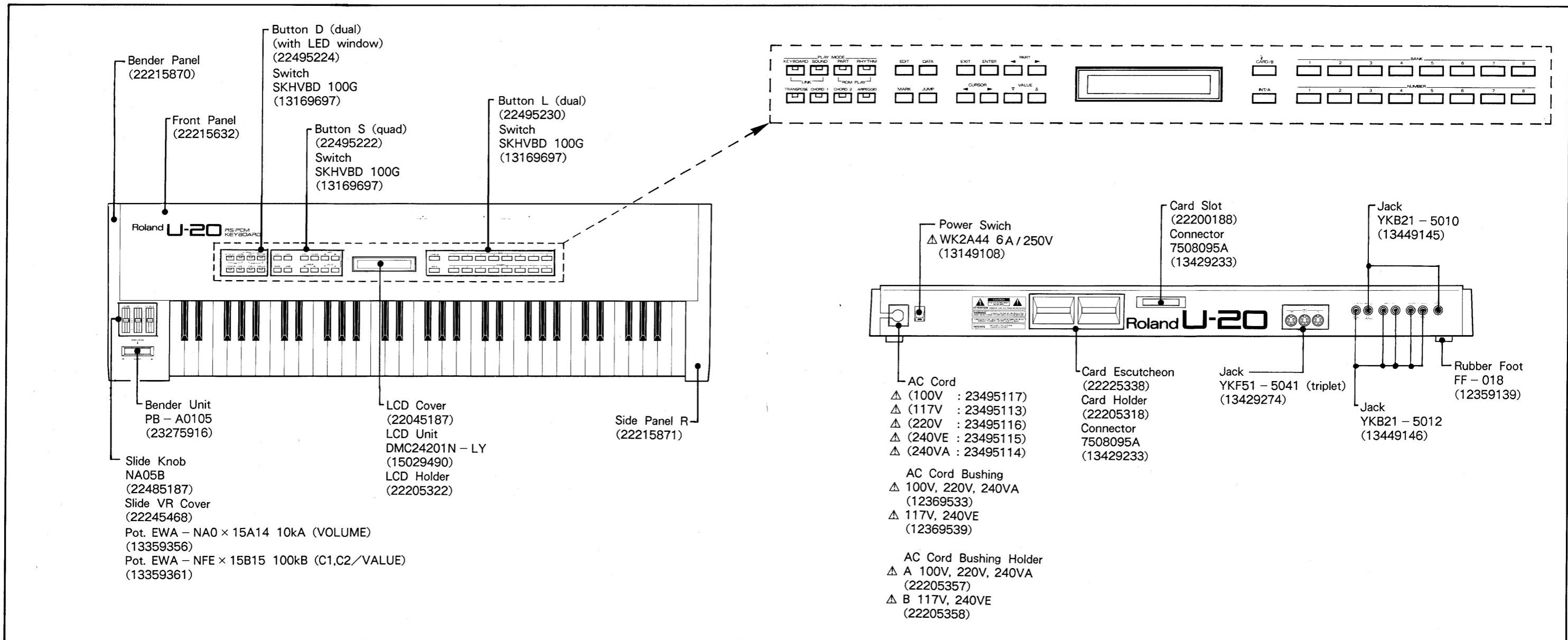
First Edition
SPECIFICATIONS/仕様

KEYBOARD	81 notes (with velocity sensitivity and channel aftertouch)
SOUND GENERATOR	RS - PCM Sound Generation maximum Simultaneous Notes : 30 Notes
INTERNAL MEMORY	
Setup :	1
Keyboard Patches :	64
Chord Sets :	8
Sound Patches :	64
Timbres :	128
Rhythm Sets (64 Keys : B1 - D7) :	4
Internal Tones :	128
RAM CARD (M - 256E)	
Setup :	1
Keyboard Patches :	64
Chord Sets :	8
Sound Patches :	64
Timbres :	128
Rhythm Sets (64 Keys : B1 - D7) :	4

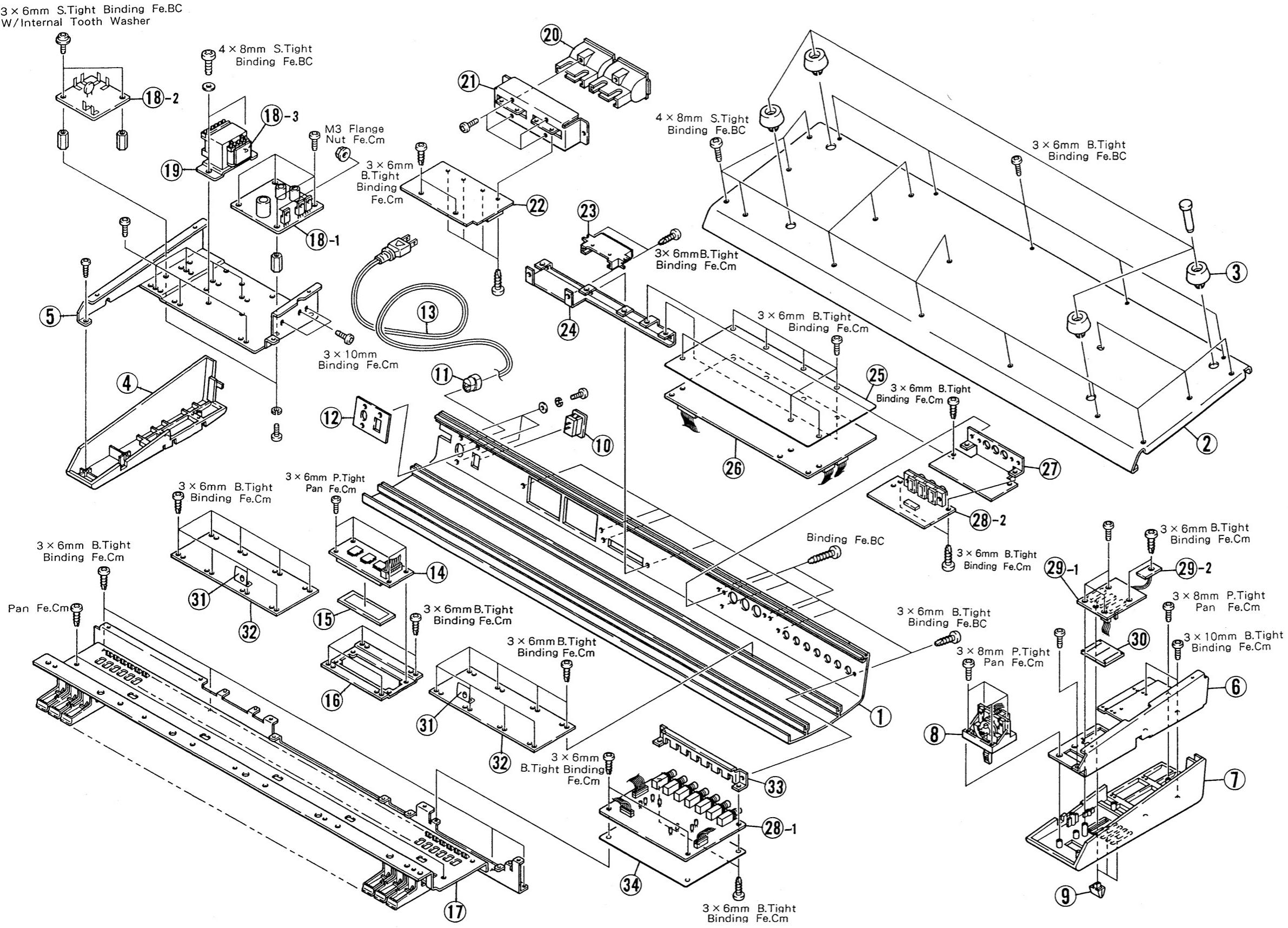
DISPLAY	2 line 24 character (with backlight)
DIMENSIONS	985 (W) x 310 (D) x 85 (H) mm 38 - 3/4" x 12 - 1/6" x 3 - 1/4" inch (W x D x H)
WEIGHT	10 kg (22 lbs)
POWER CONSUMPTION	100 V : 15 W Other Voltage : 20 W
ACCESSORIES	Owner's Manual : English (26025696) x 1 : Japanese (26025695) x 1 Sound Patch Chart Connection Cable (PJ - 1M) (23430675S) x 1

TABLE OF CONTENTS

EXPLODED VIEW	分解図	2
KEYBOARD EXPLODED VIEW	鍵盤分解図	3, 4
PARTS LIST	パーツリスト	5
WIRING	ワイヤリング	6-8
BLOCK DIAGRAM	ブロック図	9
TEST MODE	テストモード	10-21
CONFIRMATION OF P-ROM VERSION No.	P-ROMバージョンNo.の確認	(10)
MEMORY INITIALIZE	メモリーのイニシャライズ	(20)
FACTORY DATA LOAD	工場出荷時のデータの読み込み	(21)
PROGRAM ROM REPLACEMENT PROCEDURE	プログラムROMの交換手順	21
MAIN BOARD	メインボード	22, 23
JACK BOARD/MIDI BOARD	ジャックボード/ミディボード	24
BENDER BOARD/CARD BOARD	ベンダーボード/カードボード	25
SWITCH BOARD/POWER SUPPLY BOARD	パネルボード/電源ボード	26
IC DATA	ICデータ	27



EXPLODED / 分解図



No.	PART NAME	PART No.
1	Front Panel	22215632
2	Bottom Cover	22025437
3	Rubber Foot	12359139
4	Side Panel R	22215871
5	Power Transformer Holder	22205316
6	Bender Holder	22205315
7	Bender Panel	22215870
8	Bender Unit	23275916
9	Knob	22485187
10	Power Switch Δ	13149108
11	AC Cord Bushing Δ 100V, 220V 117V, 240VE, 240VA	12369533 12369539
12	AC Cord Bushing Holder Δ 100V, 220V, 240VA 117V, 240VE	22205357 22205358
13	AC Cord Δ 100V 117V 220V 240VE (with 13A Fuse) 240VA	23495117 23495113 23495116 23495115 23495114
14	LCD Unit	15029490
15	LCD Cover	22045187
16	LCD Holder	22205322
17	Keyboard	7621320000
18-1	Power Supply Board	7621308000
18-2	Primary Board	
18-3	Jamper Board	
19	Power Transformer Δ	22455512U0
20	Card Escutcheon	22225338
21	Card Holder	22205318
22	Card Board	7621330000
23	Card Slot	22200188
24	Main Holder	22205319
25	Main Shield Paper	22255290
26	Main Board	7621390000
27	MIDI Holder	22205340
28-1	Jack Board	7621317000
28-2	MIDI Board	
29-1	Bender Board	7621331000
29-2	Jamper Board	
30	Slide VR Cover	22245468
31	Grounding Reaf	23455314
32	Switch Board	7621314000
33	Jack Holder	22205317
34	Jack Shield Paper	22255289

KEYBOARD EXPLODED VIEW / 鍵盤分解図

KEY REMOVAL

1. Remove the stopper.

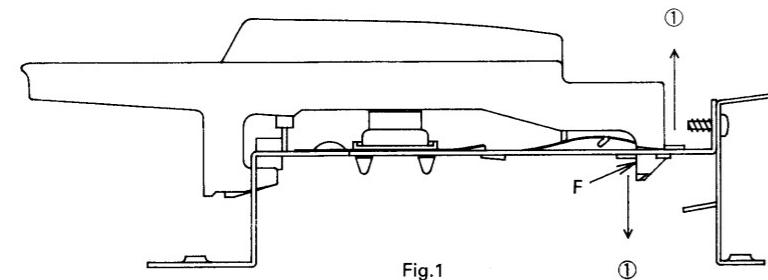


Fig.1

2. Pulling the key in the direction of arrow ②, disengage the key fulcrum from the chassis. See Fig.3 and 4 for disengaged status.

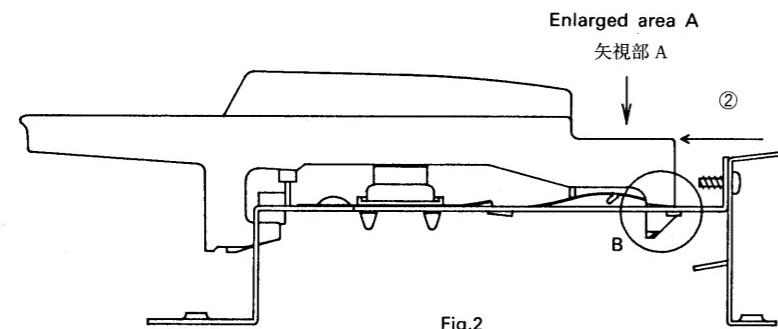
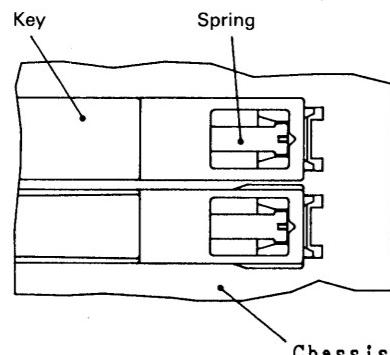
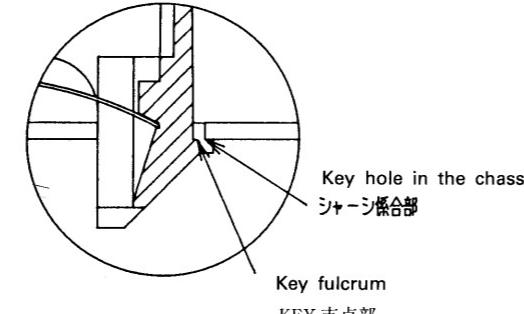


Fig.2

Fig.3
矢視部 A 詳細Fig.4
B 部 詳細

3. Taking care not to distort the spring, lift the key in the direction of ③.

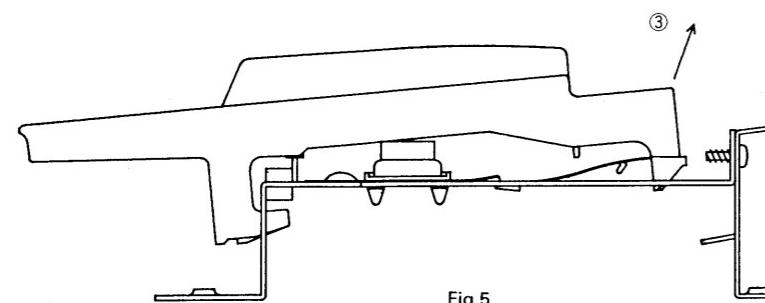


Fig.5

3. KEY を引き上げる。(方向 3)
この時スプリングを変形させない様、注意すること。

KEY INSTALLATION

1. Place the spring onto the chassis as show in Fig.6.

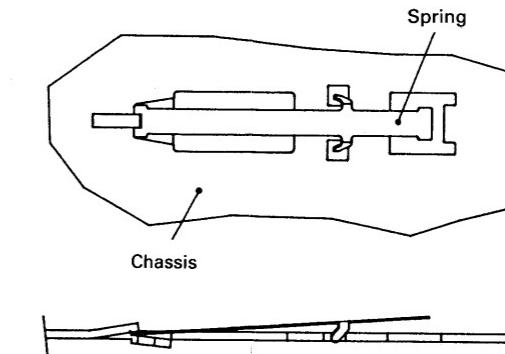


Fig.6

2. Referring to Fig.8, press the key in the direction of ④.

KEY の取り付け方

1. Fig. 6 に示す様スプリングをシャーシに置く。

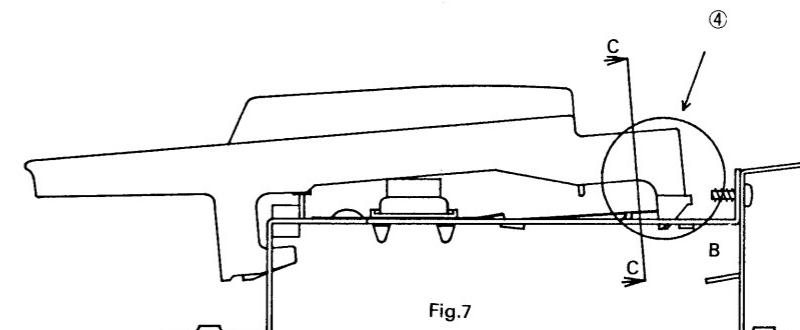


Fig.7

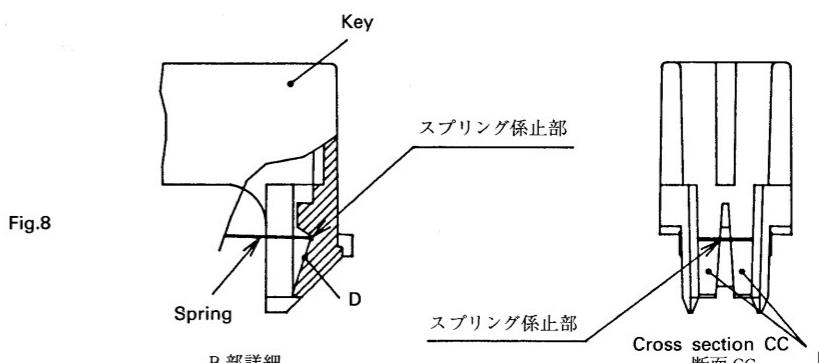


Fig.8

Caution:

Firmly rest the spring on the spring dent (Fig.8). Don't let the spring stop at the slope D or the key touch will differ from the previous sensitivity.

2. スプリングを KEY スプリング係止部にあて(Fig. 8 参考) 方向 4 に KEY を押し込む。

注) スプリングを Fig. 8 に示すスプリング係止部に確実に係止しないと(斜面 D に止まる事がある)KEY タッチが変化してしまう。

3. Verify that there is on clearance between the key fulcrum and portion F in the chassis. Attach the stopper (Fig. 1) on the portion F.

3. KEY 支点部とシャーシ係合部間 (F) に隙間の無い事を確認し、ストッパーは Fig. 1 に示す (F) に沿って貼る。

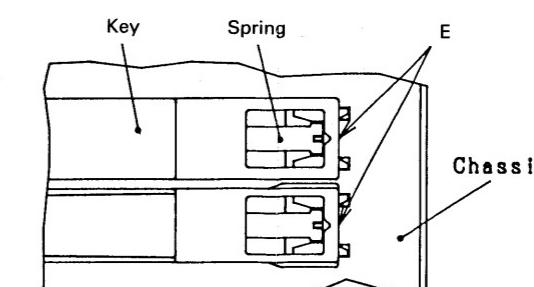


Fig.9

①CONTACT BOARD INSTALLATION

①基板の取り付け方

First align the $\phi 2.1\text{mm}$ hole between C3 and C3# of the contact board with a half pierce of the chassis. Next align the slot ($\phi 2.1 \times 4\text{ mm}$) of remaining octaves with half pierces, respectively. Make sure the joint of the CIC cable and te board end are on the left end of the lowest G of the chassis.

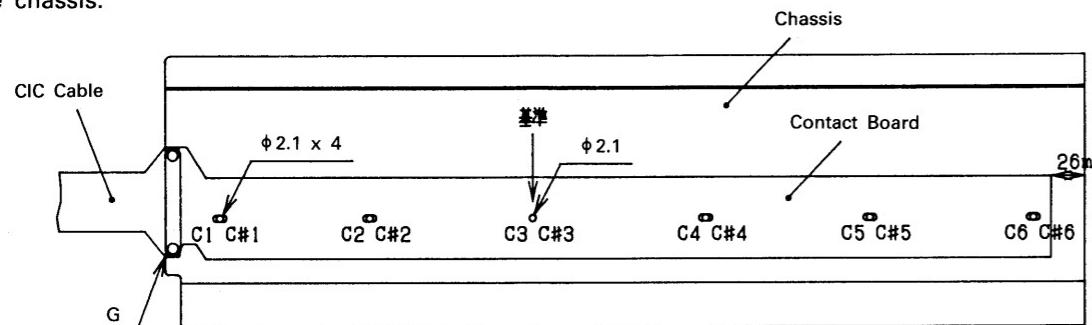


Fig.10

②CONTACT BOARD INSTALLATION

②基板の取り付け方

Place the contact rubber sheet on the contact board. Align contact projections with holes in the board. Press the hole in top face of the projection with a small rod (like clip shown in Fig.11) so that the projection is held in a hole of the chassis. Note that the left end of a rubber contact should be placed over the right end of the left side rubber sheet (see H in Fig.11).

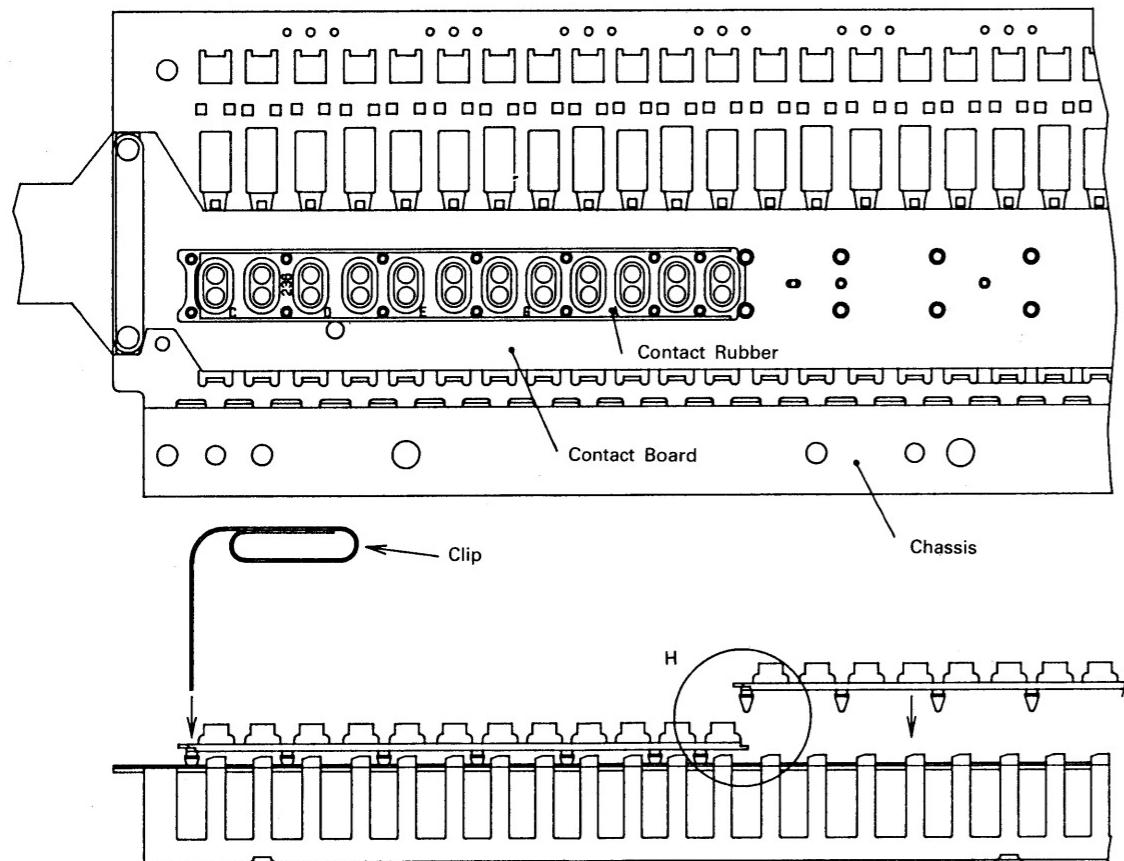


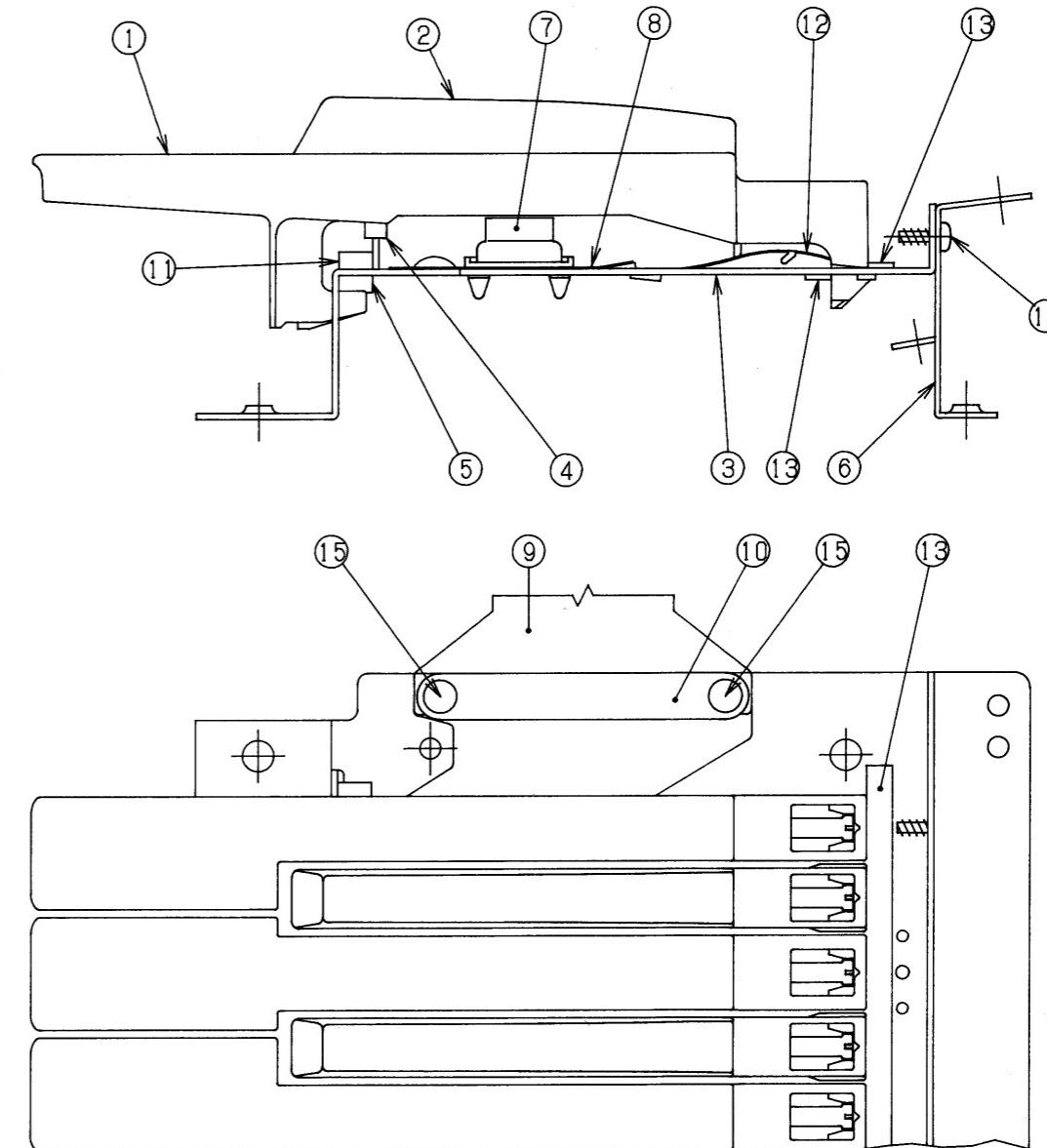
Fig.11

CAUTION: When removing a contact rubber sheet, gently pull it off the board or sheet will break off.

注：接点ゴムを取りはずす時、無理に引っ張るとゴム足が切れることがあるので慎重に扱うこと。

U-20 (SK-761-BWCA) PARTS LIST

NO.	PARTS NO.	PARTS NAME	
1	22575254	SK-7 NATURAL KEY C/F	257-254
	22575256	" E/B	257-256
	22575258	" D	257-258
	22575259	" G	257-259
	22575253	" A	257-253
	22575255	" C' /F'	257-255
2	22575261	SK-7 SHARP KEY	257-261
3	22815653	SK-7 CHASSIS 61P	281-653 SK-761 CHASSIS 281-653CA ASSY
4	22155775	SK-7 GUIDE BUSH	215-775 281-677 22815677
5	22265493	SK-7 FELT 61KEY	226-493
6	22125285	ANGLE	212-285
7	22185236	SK-7 CONTACT LUBBER 12PW	218-236 SK-761 CONTACT LUBBER
7	22185237	SK-7 CONTACT LUBBER 13PW	218-237 7621422000
8	22925669	SK-7 CONTACT BOARD 61P	SK-761-BWCA CONTACT BOARD ASSY
9	23475276	CIC CABLE	347-276 7621322000
10	22205309	SK-761 CONNECTOR HOLDER	220-309
11	23165695	SK-761 CA-01 AFTERTOUCH ASSY	
12	22175203	SK-7 SPRING	217-203
13	22135430	SK-761 STOPPER	213-430
14	—	TAPPING SCREWS 3X6 B1	☆
15	—	NYLON RIVET NRP-355	☆



PARTS LIST

SAFETY PRECAUTIONS:

The parts marked **△** have safety-related characteristics.
Use only listed parts for replacement.

安全上の注意:
△が付いている部品は、安全上特別な規格でつくられたものです。
交換の際は、指定された部品番号以外の部品は使わないようにして下さい。

CONSIDERATIONS ON PARTS ORDERING

When ordering any parts listed in the parts list, please specify the following items in the order sheet.

QTY	PART NUMBER	DESCRIPTION	MODEL NUMBER
Ex. 10	22575241	Sharp Key	C-20/50
15	2247017300	Knob (orange)	DAC-15D

Failure to completely fill the above items with correct number and description will result in delayed or even undelivered replacement.

[バージョンに関するお願い]
オーダーシートには、必ず下記の4項目は正確に記入して下さい。(例外は除く)
例 必要数 バージョン番号 品名 使用機種
10 22575241 Sharp Key C-20/50
15 2247017300 Knob (orange) DAC-15D
もし記入漏れ、誤記等がある場合、必要部品が発送出来なかったり、大幅な遅れの原因になります。
御協力をお願いします。

CASING

22215632	Front Panel
22025437	Bottom Cover
22215871	Side Panel R
22215870	Bender Panel
22045187	LCD Cover
22245468	Slide VR Cover
12359139	Rubber Foot FF-018

PCB ASSY

E 7621390000	Main Board (PCB 22925735)
7621330000	Card Board (PCB 22925724)
7621314000	Switch Board (PCB 22925726)
7621317000	Jack Board (PCB 22925727 3/3) MIDI Board (PCB 22925727 1/3)
7621310000	Bender Board (PCB 22925727 2/3)
7621308000	Power Supply Board (PCB 22925725)

Note: 1. The jack board includes the MIDI board.

2. The power supply board can be use for any voltage of 100V, 117V, 220V and 240V.

注) 1. ジャックボードは、MIDIボードを含みます。

2. 電源ボードは各電圧共通に使用できます。

BUTTON, KNOB

22485187	Knob NA05B	VOLUME, C1, C2/VALUE
22495222	Button (S) quad	EDIT, DATA, PART ▲▼, EXIT, ENTER, MARK, JUMP, CURSOR ▲▼, VALUE ▲▼
22495230	Button (L) dual	BANK1~8, NUMBER1~8, CARD/B, INT/A
22495224	Button (D) dual (with LED window)	MODE (KEYBOARD, SOUND, PART, RHYTHM, TRANSPOSE, CHORD1, CHORD2, ARPEGGIO)

SWITCH

13169697	SKHVBD 100G	Panel Board
△ 13149108	WK2A44 6A/250V	Power Supply Board

JACK, SOCKET

13449145	YKB21-5010 (Stereo)	PHONES, EXT CONTROL
13449146	YKB21-5012 (Mono)	MIX OUT L (MONO) /R, DIR OUT L/R, PEDAL HOLD
13429551	DICP - 32CS - E	IC Socket Main Board
13429274	YKF51-5041 (Triplet)	MIDI IN/ OUT/ THRU

POWER TRANSFORMER

△ 22455512U0	Universal	100/117/220/240V
--------------	-----------	------------------

INDUCTOR

12449361	EXC - ELSR35T	Main Board, Jack Board, MIDI Board
13529186	ELKTR150GA	Main Board
13529187	ELKTR391CA	Main Board, Jack Board, MIDI Board
12449347	EXCELDR35V	Main Board

RESONATOR

15299106	CA301 12.000MHz	Crystal
15299117	CA301 32.768MHz	Crystal

POTENTIOMETER

13359356	EWA - NAB × 15A14 10KA	VOLUME
13359361	EWA - NFE × 15B15 100KB	C1, C2/VALUE
13299217	RVF6P51 - 5 - 104N 100K	Trimmer D/A Adjust

TRANSISTOR

15329507	DTA - 114EK T - 96	Main Board
15329508	DTC - 114WK T - 96	Main Board
15329501	DTA - 124EK T - 96	Main Board
15309101	2SA1037KR T - 96	Main Board
15319101	2SC2412KR T - 96	Main Board
15119135	2SA1115 - TP - E	Jack Board
15129198	DTA124ES - TP	MIDI Board
15129194	DTC314 - TS - TP	Jack Board
15129168	DTC124ES - TP	MIDI Board

TRANSISTOR ARRAY

15289113	TD62305F - T2	Main Board
----------	---------------	------------

IC

15179286	P8098	CPU	Main Board
15179950	LH5910	MASK ROM	Main Board
(15179986	U - 20 OTP ROM M5M27C100P	OTP ROM)	
15179892F0	MB834000A - 20P - G - 226	Wave ROM - A	Main Board
15179893F0	MB834000A - 20P - G - 227	Wave ROM - B	Main Board
15179894F0	MB834000A - 20P - G - 228	Wave ROM - C	Main Board
15179895F0	MB834000A - 20P - G - 229	Wave ROM - D	Main Board
15179947	MB834000A - 20P - G - 3A1	Wave ROM - E	Main Board
15179948	MB834000A - 20P - G - 3A2	Wave ROM - F	Main Board
15179936	MB81464 - 12	D RAM	Main Board
15279508	HM62256LFP - 12T (Flat)	256k SRAM	Main Board
15229894	MB87419 R06 - 0005 (Flat)	PCM Custom IC	Main Board
15229895	MB87420 R06 - 0006 (Flat)	PCM Custom IC	Main Board
15239126	TC23SC140AF - 007 (Flat)	Effect Custom IC	Main Board
15239124	SSC1000 (Flat)	Key SCAN Gate Array	Main Board
15229848	μ PD65005G - 062 (Flat)	RAM CARD Gate Array	Main Board
15239130	MB623157 μ PF - G - BND (Flat)	I/O Gate Array	Main Board
15259706T0	TC74HCU04F - T2 (Flat)	Hex Inverter	Main Board
15259704T0	TC74HC04F - T2 (Flat)	Hex Inverter	Main Board
15269601	74F04SJL (Flat)	Hex Inverter	Main Board
15169304H0	HD74LS04P (Flat)	Hex Inverter	MIDI Board
15259701T0	TC74HC00F - T2 (Flat)	Quad 2 - Input NAND Gate	Main Board
15259716T0	TC74HC32F - T2 (Flat)	Quad 2 - Input OR Gate	Main Board
15269609	74F02SJL (Flat)	Quad 2 - Input NOR Gate	Main Board
15269610	74F32SJL (Flat)	Quad 2 - Input OR Gate	Main Board
15259101	BU4051BF T2 (Flat)	8 - channel Analog Multiplexer	Main Board
15169605	TC74HC4052 (Flat)	4 - channel Analog Multiplexer	Jack Board
15209122	PCM56P (Flat)	D/A Converter	Jack Board
15189210	BA15218F T - 2 (Flat)	OP AMP (Dual in line)	Main Board
15189231	NJM4565DD (Flat)	OP AMP (Dual in line)	Bender Board, Jack Board
15189209	BA15218 (Flat)	OP AMP (Dual in line)	Jack Board
15189193	M5238P (Flat)	OP AMP (Dual in line)	Jack Board
15289110	μ PC4062G (Flat)	J - FET OP AMP (Dual in line)	Main Board
15189220	NJM2082D (Flat)	J - FET OP AMP (Dual in line)	Jack Board
△ 15199155	L78MR05R (Flat)	+ 5V Voltage Regulator	Power Supply Board
△ 15199176	L78M12ML (Flat)	+ 12V Voltage Regulator	Power Supply Board
△ 15199172	TA79L005P - TPE6 (Flat)	- 5V Voltage Regulator	Jack Board
△ 15199177	L79M12ML (Flat)	- 12V Voltage Regulator	Power Supply Board

OPT - ISOLATOR

15229718	6N137		MIDI Board
----------	-------	--	------------

DIODE, LED

15339103	MA - 153	Chip

WIRING/ワイヤリング

fig. 1

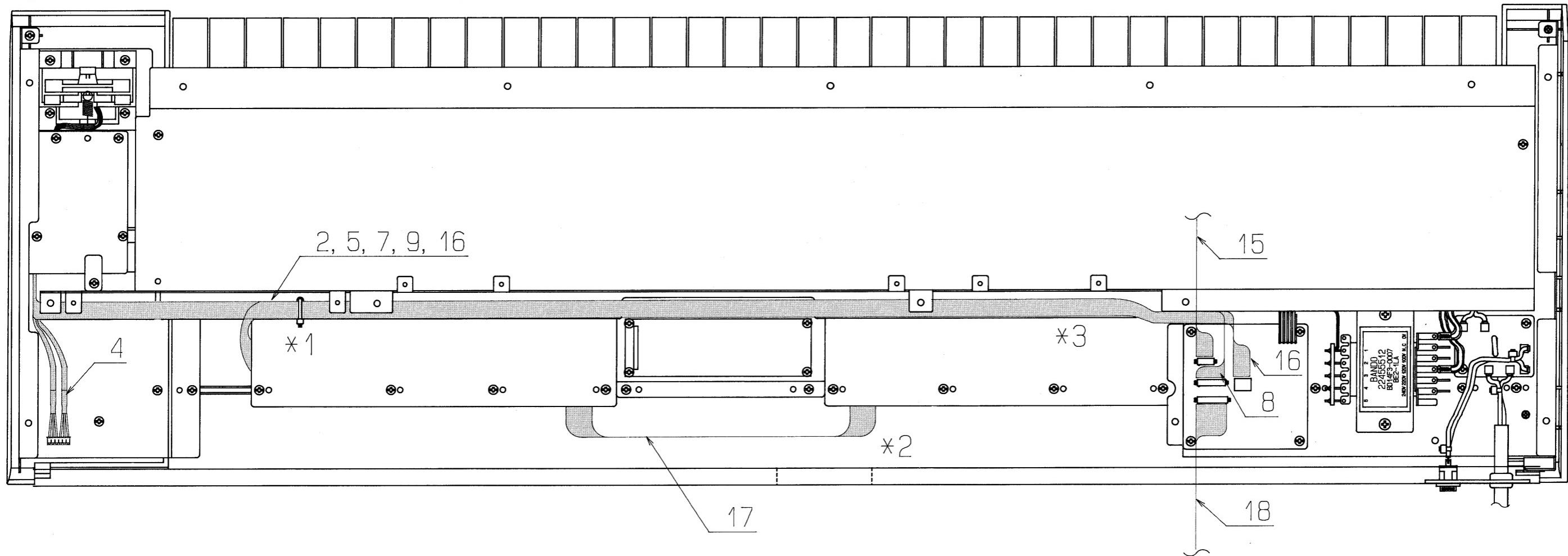
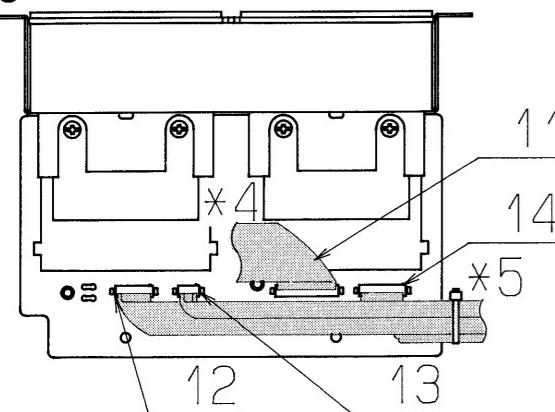


fig. 2

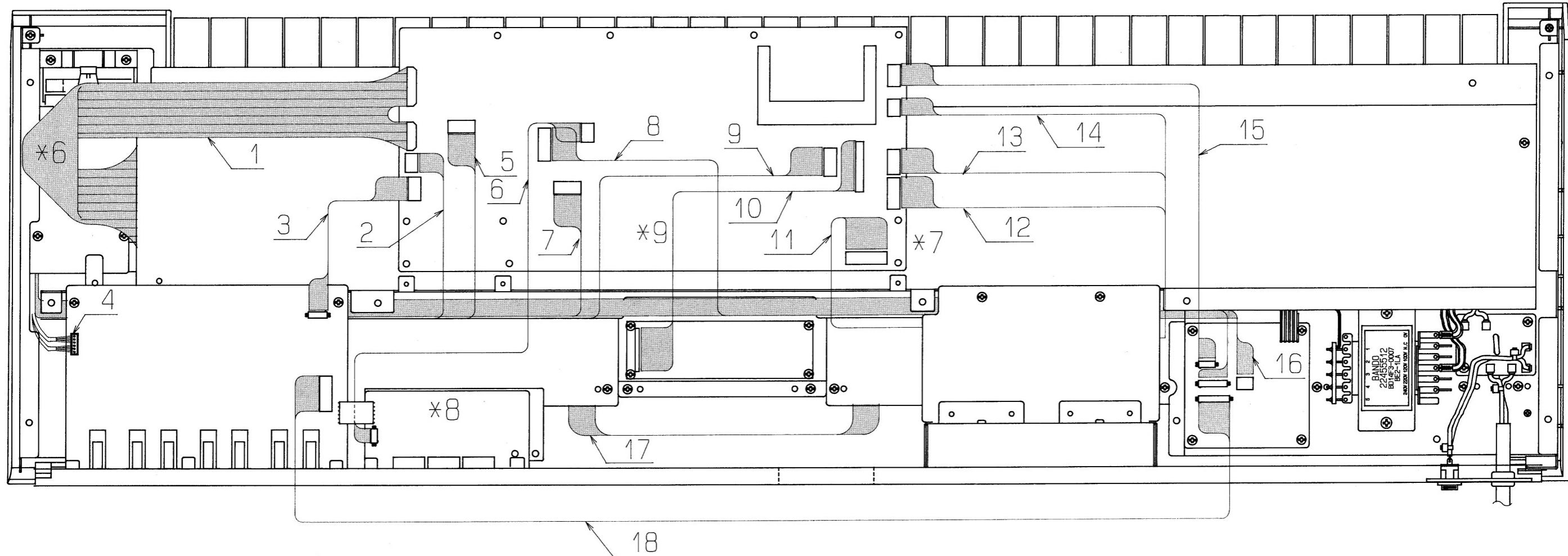


- * 1. Clamp the 5 wires on the keyboard angle in the order of 16, 9, 7, 5 and 2 from the panel side.
- * 2. Bend the wiring toward the panel surface so that it does not catch on the card insertion port.
- * 3. Trail wires 8 and 16 along the keyboard angle.
- * 4. Do not the wiring catch on the card and connector insertion ports.
- * 5. Clamp in the order of 12, 13 and 14 from beneath.

- * 1. ワイヤリング5本をパネル側から16、9、7、5、2の順番で鍵盤のアングルにクランプします。
- * 2. ワイヤリングがカード挿入口に掛からないようワイヤリングをパネル面側に折り曲げます。
- * 3. 8と16を鍵盤のアングルに沿ってはわします。
- * 4. ワイヤリングがカード・コネクタの挿入口に掛からないこと。
- * 5. 下から12、13、14の順番でクランプする。

- 1: From keyboard to main board (flat cable)
 2: From switch board to main board (5P white)
 3: From jack board to main board (7P white)
 4: From bender board to jack board (6P)
 5: From switch board to main board (8P black)
 6: From MIDI board to main board (5P black)
 7: From bender board to main board (8P white)
 8: From power supply board to main board (11P red)
 9: From switch board to main board (9P red)
 10: From LCD unit to main board (15P)
 11: From card board to main board (14P red)
 12: From card board to main board (10P black)
 13: From card board to main board (8P white)
 14: From card board to main board (4P red)
 15: From power supply board to main board (6P black)
 16: From bender board to power supply board (4P red)
 17: From switch board L to switch board r (11P white)
 18: From power supply board to jack board (12P black)

fig. 3



* 6. Bending is strictly prohibited. Be careful in twisting the wires.

* 7. When installing the main board, bend the wiring toward the center of the main board so that it does not touch the keyboard molding.

* 8. Install the MIDI board in the panel after installing the main board.

* 9. Clamp the wiring of the LCD unit at the center so it will not spread out loosely.

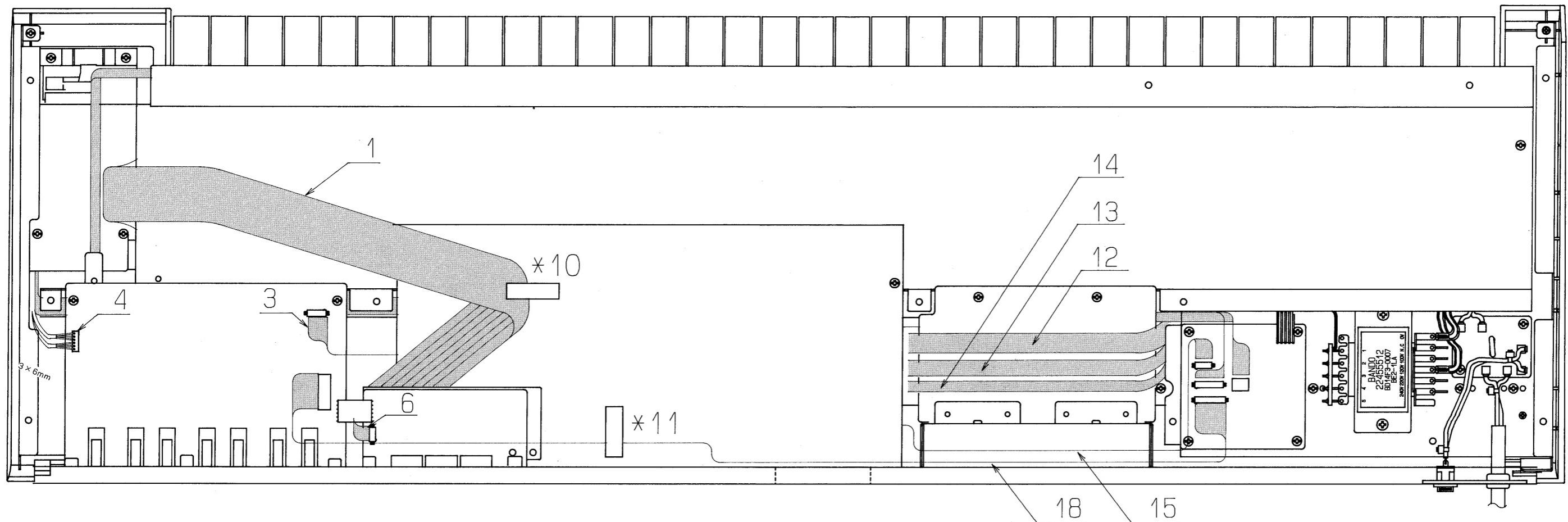
* 6. 折り曲げ厳禁 ねじり方に注意。

* 7. メイン・ボードを取り付けした際に、ワイヤリングが鍵盤のモールドにあたらないようにワイヤリングをメイン・ボード中央方向に折り曲げること。

* 8. MIDIボードはメイン・ボードを取り付けてからパネルに取り付けること。

* 9. LCDユニットのワイヤリングがバラバラにならぬよう中央でクランプのこと。

fig. 4



* 10. Attach with a piece of tape no longer than 60mm.
Bending is strictly prohibited.

* 11. Attach with a piece of tape no longer than 60mm.

* 10. 長さ 60 以内のテープで貼り付けること。折り曲げ厳禁

* 11. 長さ 60 以内のテープで貼り付けること。

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

BLOCK DIAGRAM

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

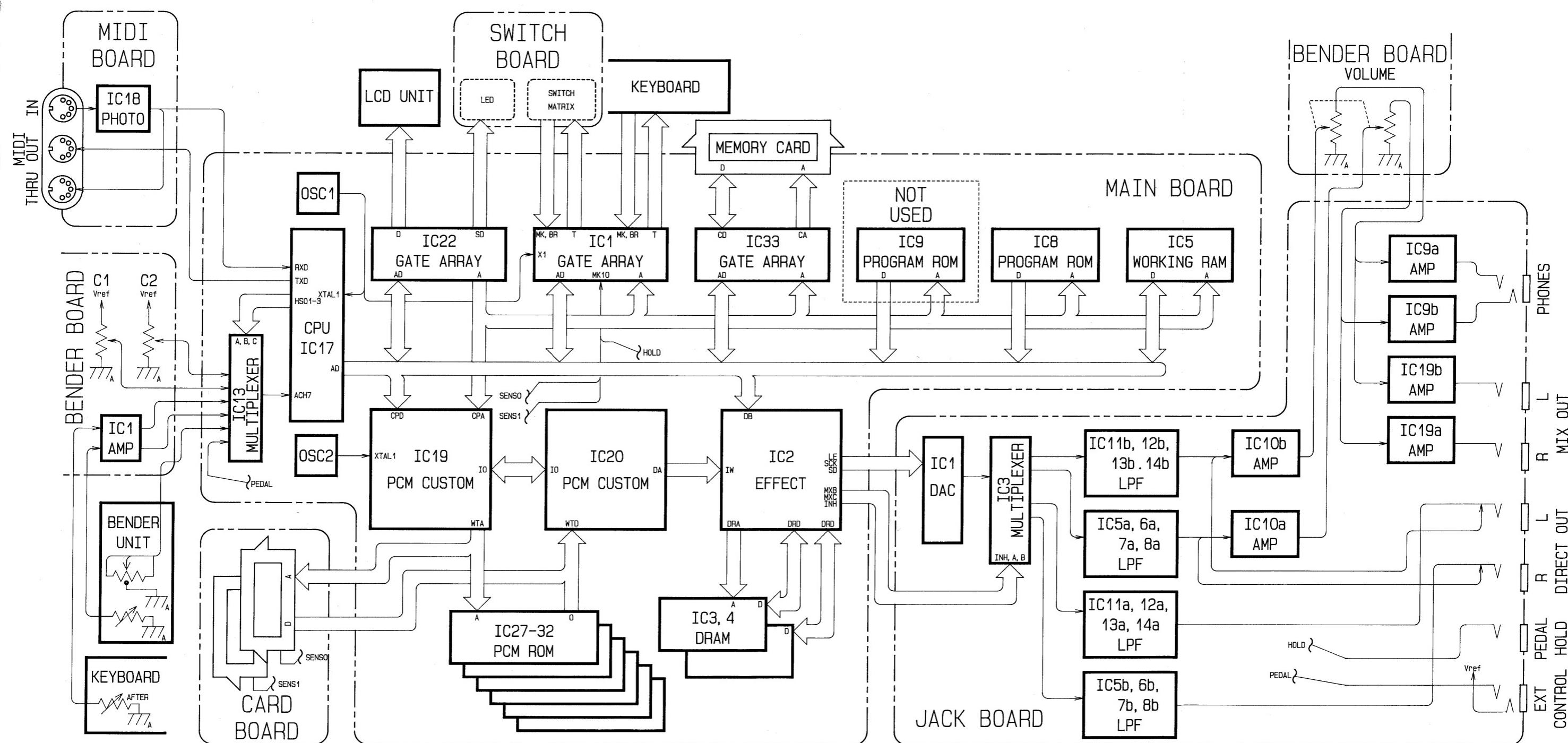
Q

R

S

T

U



TEST MODE**テスト・モード**

To enter Test Mode,(1) first press **PART** and **RHYTHM** at the same time to activate ROM play Mode and (2) then press **ENTER** while pressing **MARK** and **JUMP**.

Test Modeに入るには、**PART**、**RHYTHM**を同時に押してROM Play Modeにし、**MARK**、**JUMP**を押しながら、**ENTER**を押す。

Version Number
バージョンナンバーの表示

====< U-20 TEST MODE >====
U-20 U-.-- 89/---/--- -----

↑ Version Number

Switch operation while in Test Mode

Test Mode中のスイッチ操作

JUMP + CURSOR▶	Moves to next test item 次のテスト項目に移動
JUMP + ◀CURSOR	Moves to previous test item 1つ前のテスト項目に移動
JUMP + BANK1 - 8	Directly selects test items 1 - 8 テスト項目1 - 8をダイレクト選択
JUMP + NUMBER1 - 8	Directly selects test item 9 - 16 テスト項目9 - 16をダイレクト選択
JUMP + EXIT	Exits Test Mode テスト・モード 終了

List of Test Items

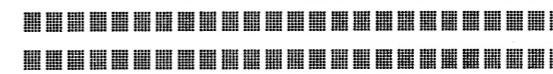
テスト項目一覧

1	LCD Contrast Test	JUMP + BANK 1
2	LED Test	JUMP + BANK 2
3	Internal RAM Test	JUMP + BANK 3
4	RAM Card Test	JUMP + BANK 4
5	PCM Card Test	JUMP + BANK 5
6	INT PCM ROM Test	JUMP + BANK 6
7	Key & Button Test	JUMP + BANK 7
8	A/D Test (1)	JUMP + BANK 8
9	A/D Test (2)	JUMP + NUMBER 1
10	MIDI Test	JUMP + NUMBER 2
11	Sound Test (1)	JUMP + NUMBER 3
12	Sound Test (2)	JUMP + NUMBER 4
13	DAC MSB Adjust	JUMP + NUMBER 5
14	Effect Test	JUMP + NUMBER 6
15	Memory Initialize	JUMP + NUMBER 7
16	Factory Data Load	JUMP + NUMBER 8

1.LCD Contrast Test

Holding down **JUMP**, Press **BANK1**
JUMPを押しながら**BANK1**を押す。

1 . LCD Contrast Test
Bender=Contrast Control



Tilt Bender lever to the left
ベンダーレバーを左側に傾けていく。

LCD dot display lightens evenly?
LCDのドット表示がムラなく薄くなる。

NO

Tilt Bender lever to the right
ベンダーレバーを右側に傾けていく。

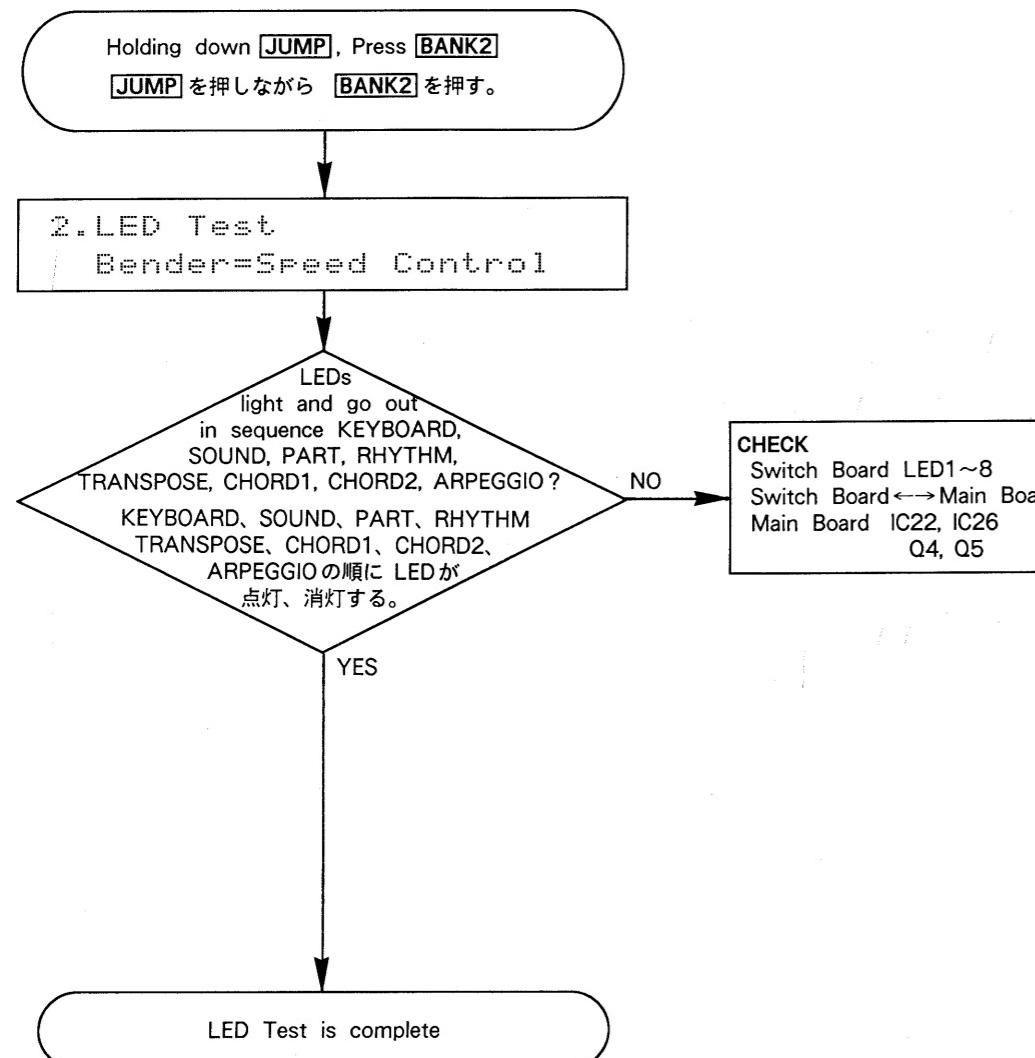
LCD dot display darkens evenly?
LCDのドット表示がムラなく濃くなる

NO

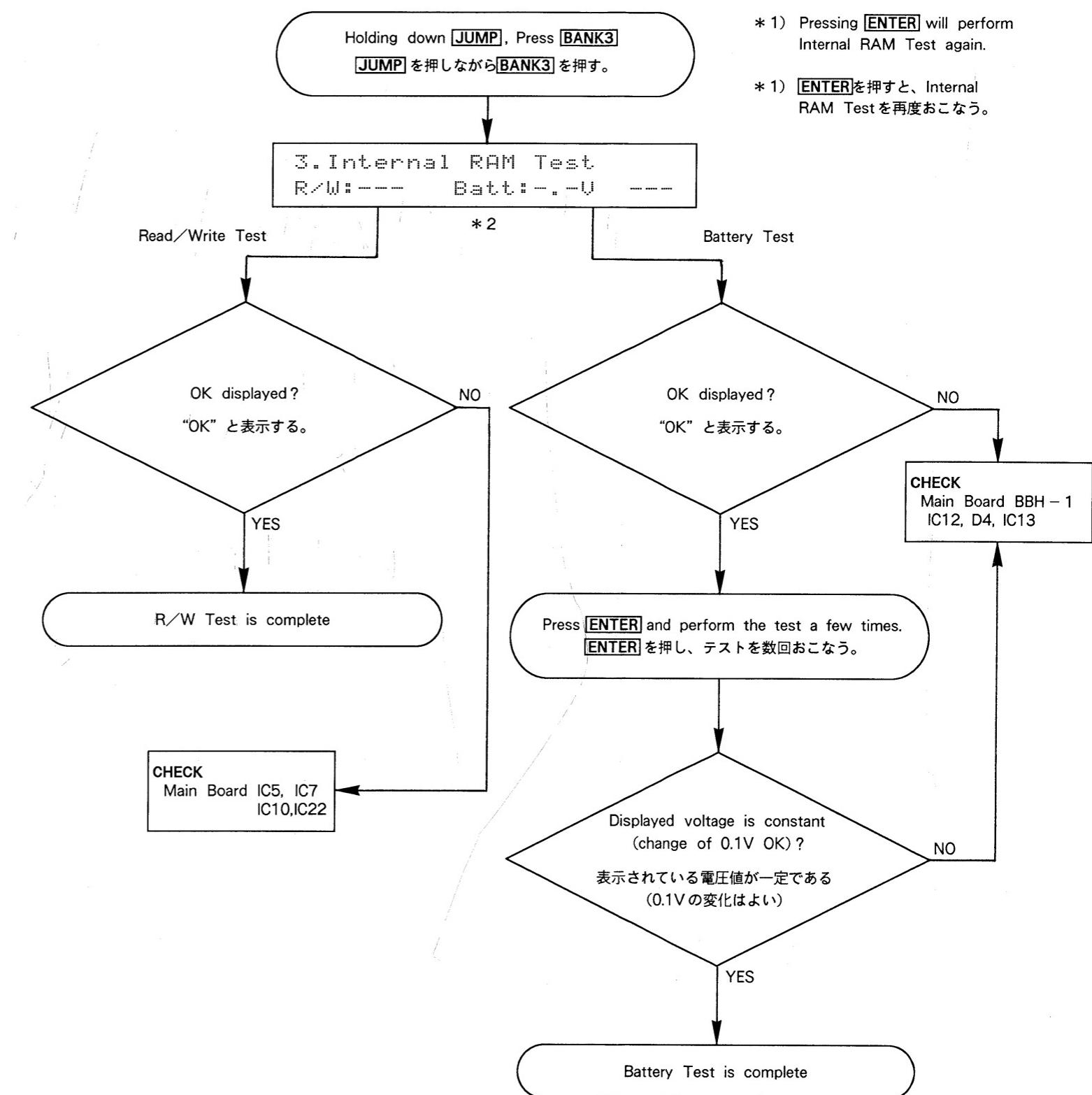
CHECK
LCD UNIT ↔ Main Board
Main Board IC11

LCD Contrast Test is complete

2. LED Test



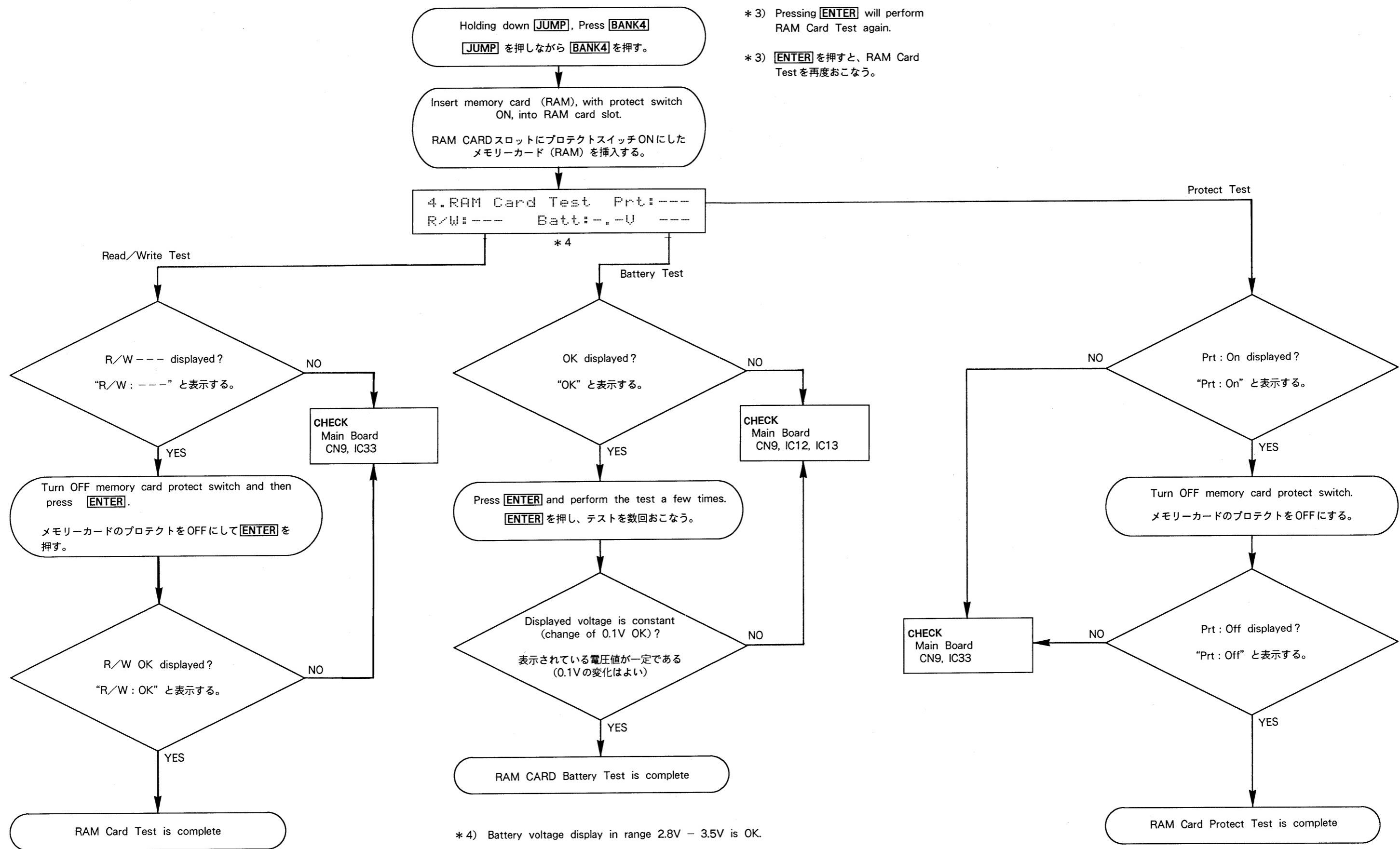
3. Internal RAM Test



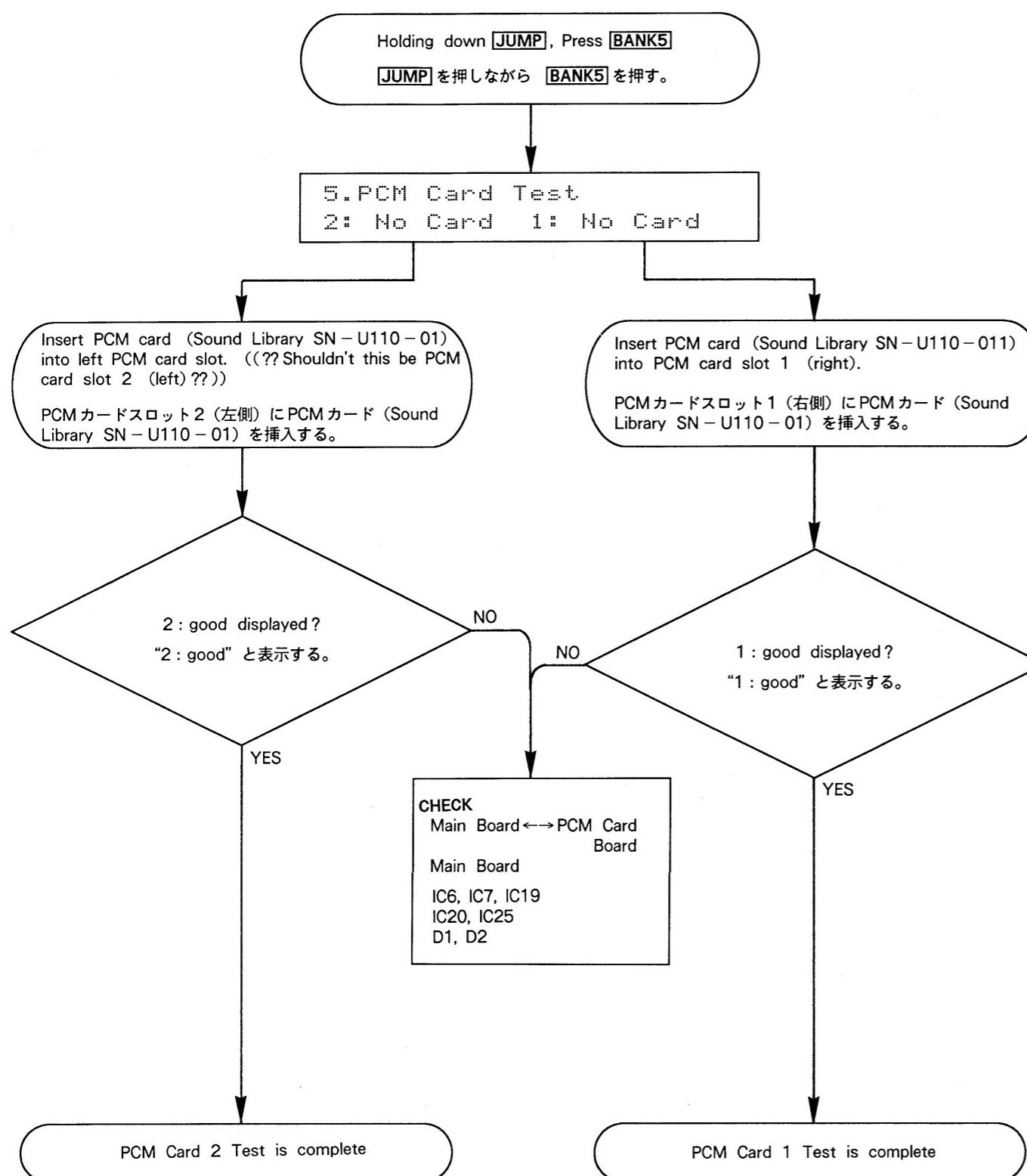
* 2) Battery voltage display in range 2.8V – 3.5V is OK.

* 2) バッテリーの電圧表示は、2.8V~3.5Vの間で“OK”となる。

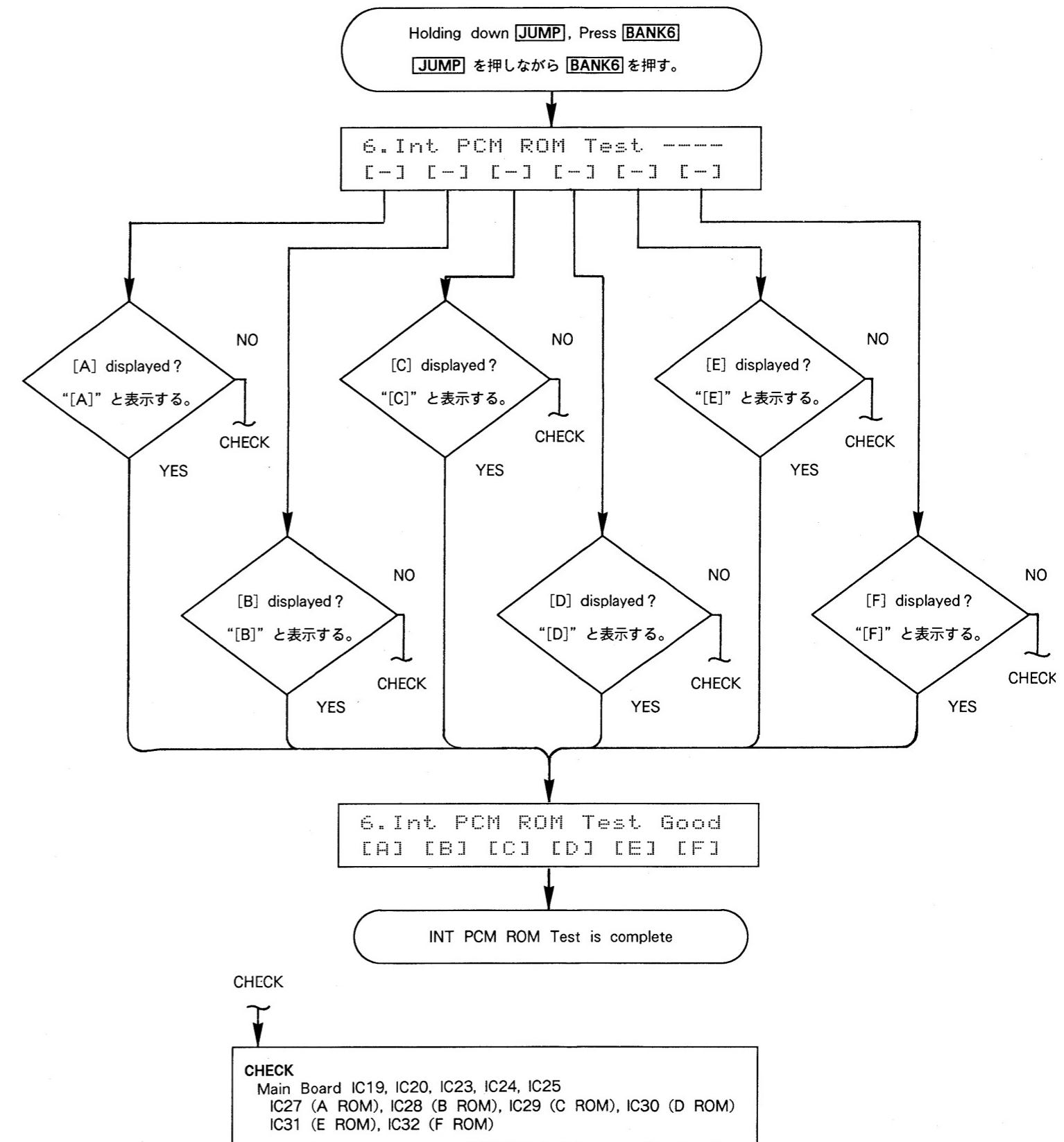
4. RAM Card Test



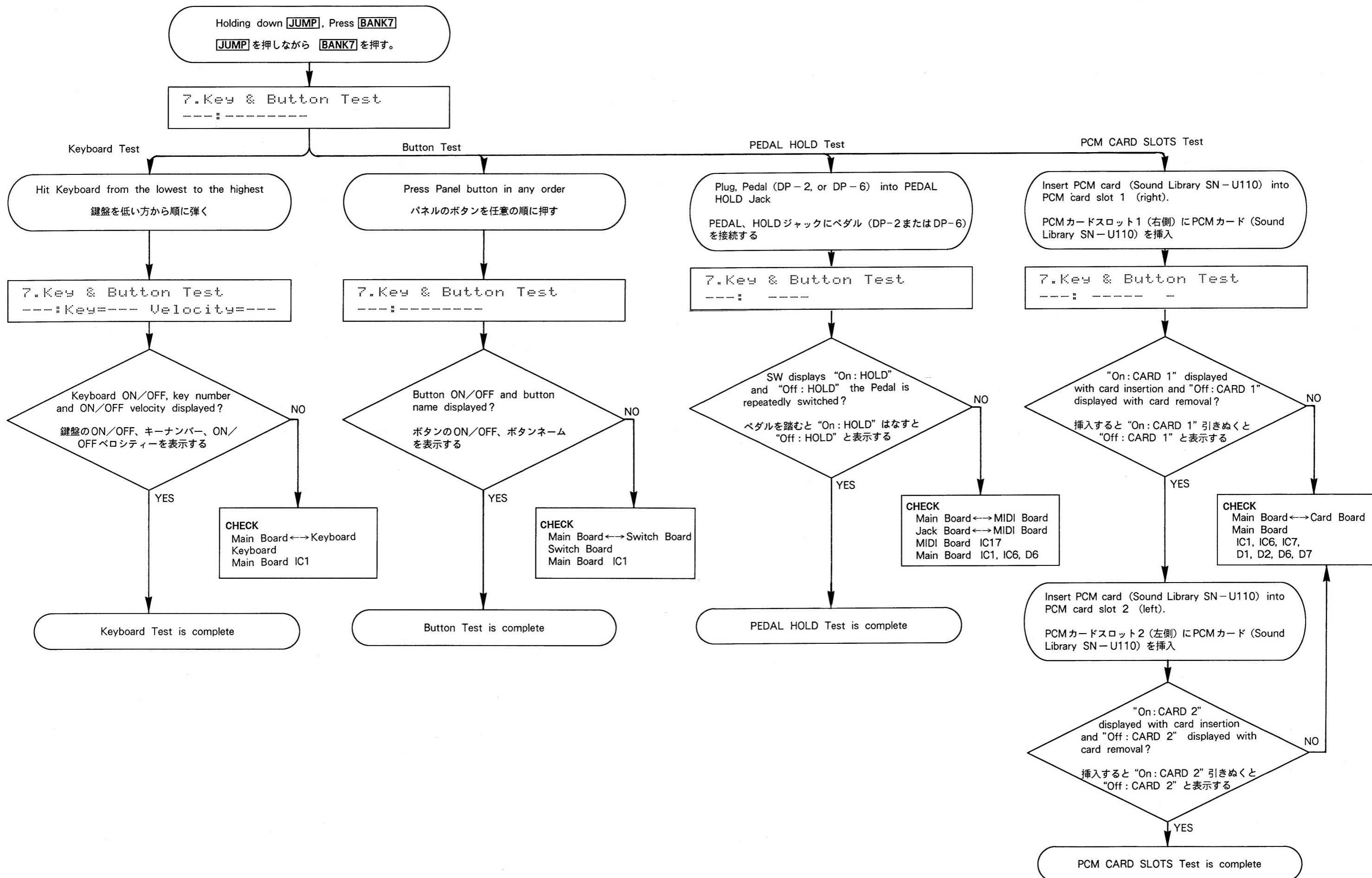
5. PCM Card Test



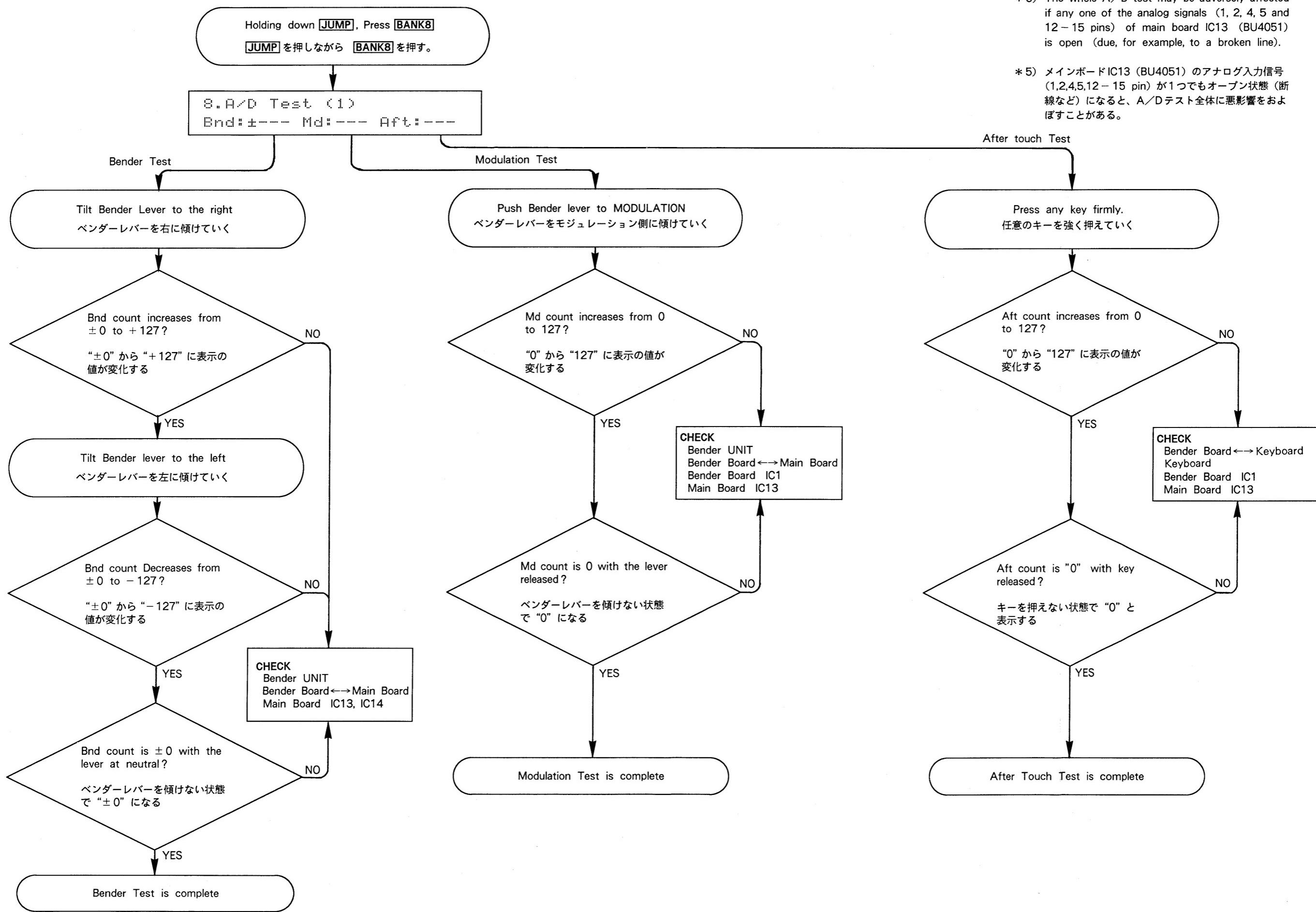
6.INT PCM ROM Test



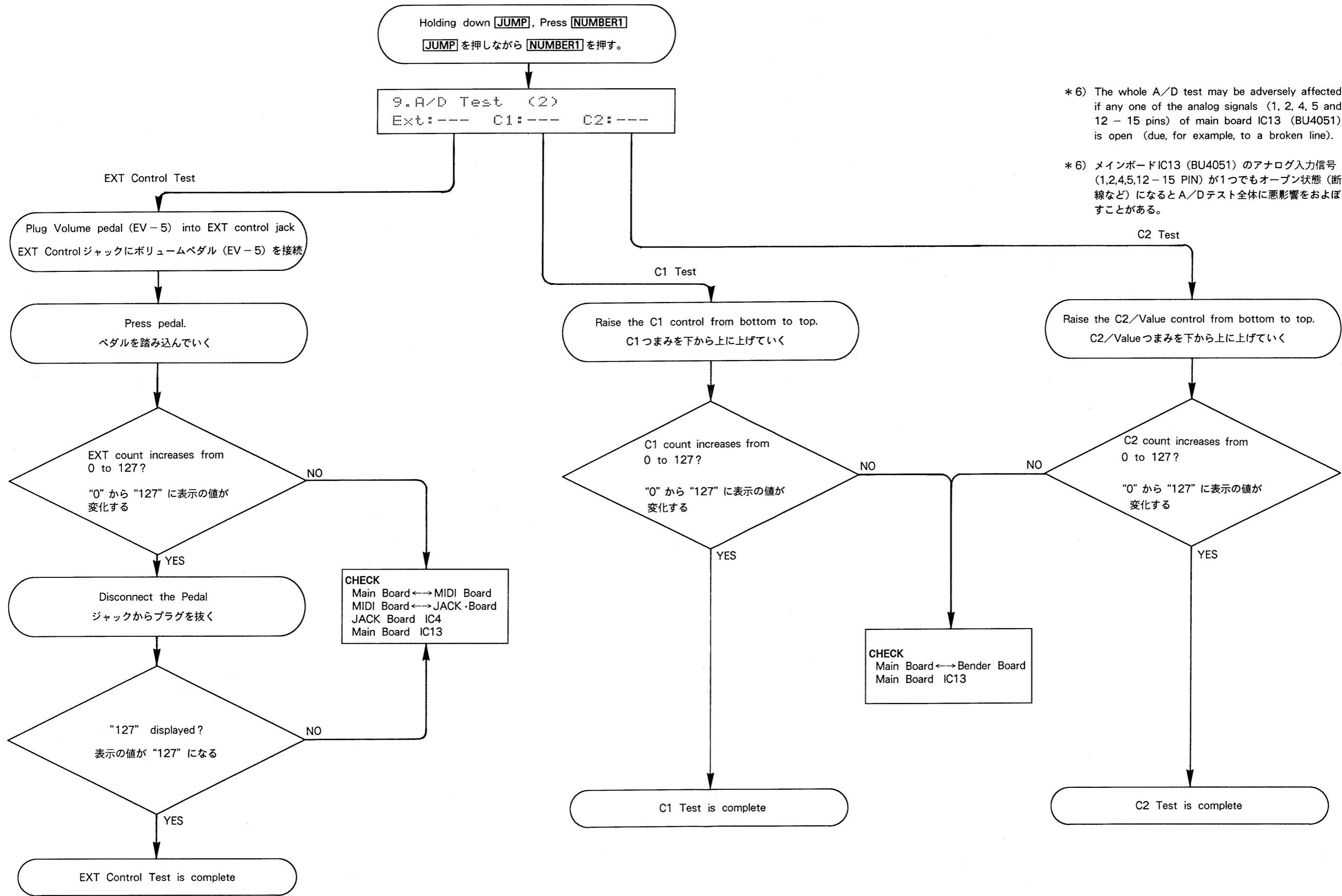
7. Key and Button Test



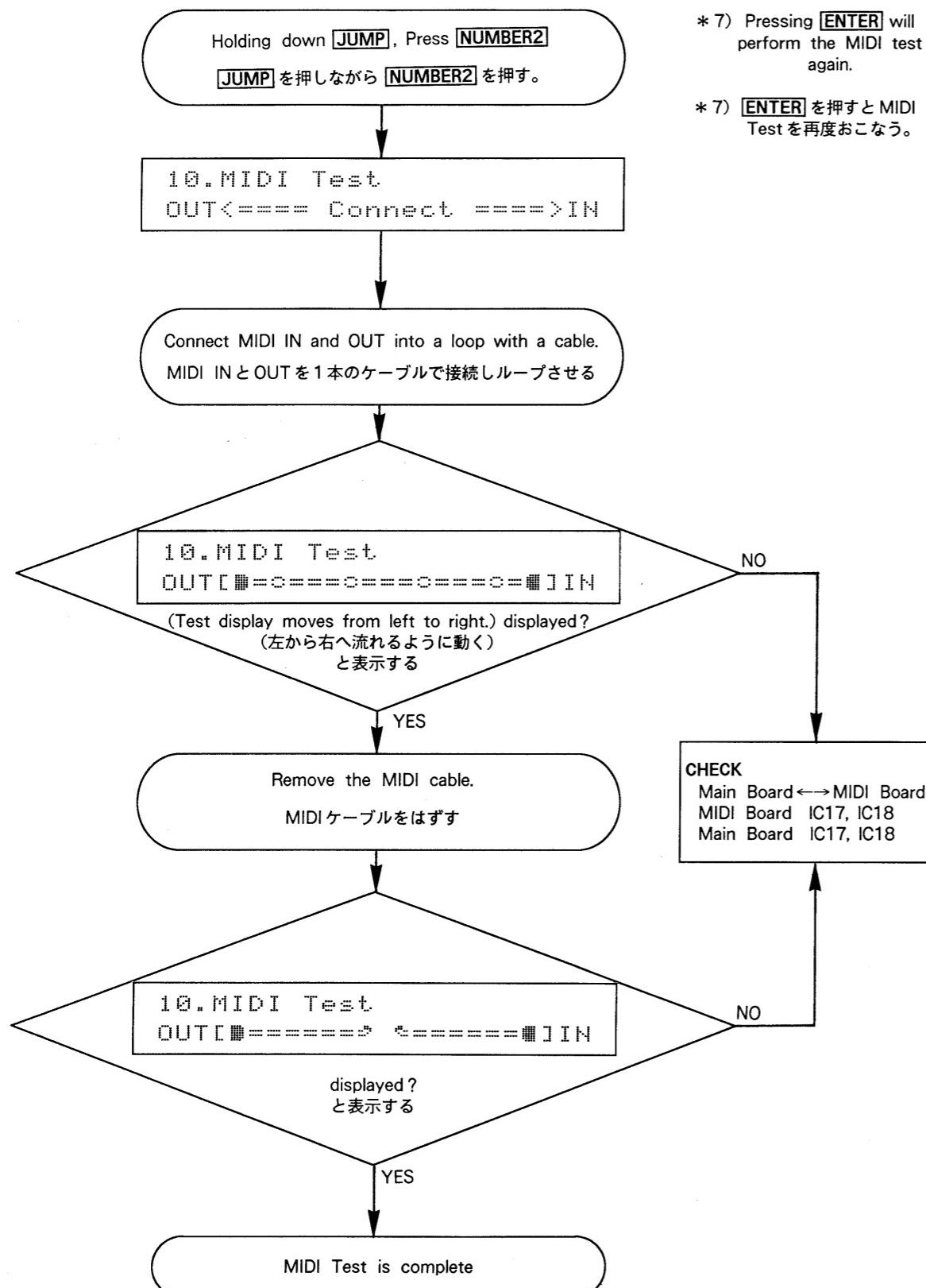
8. A/D Test (1)



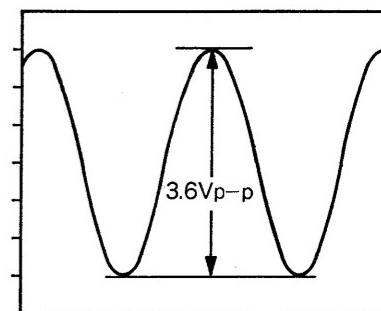
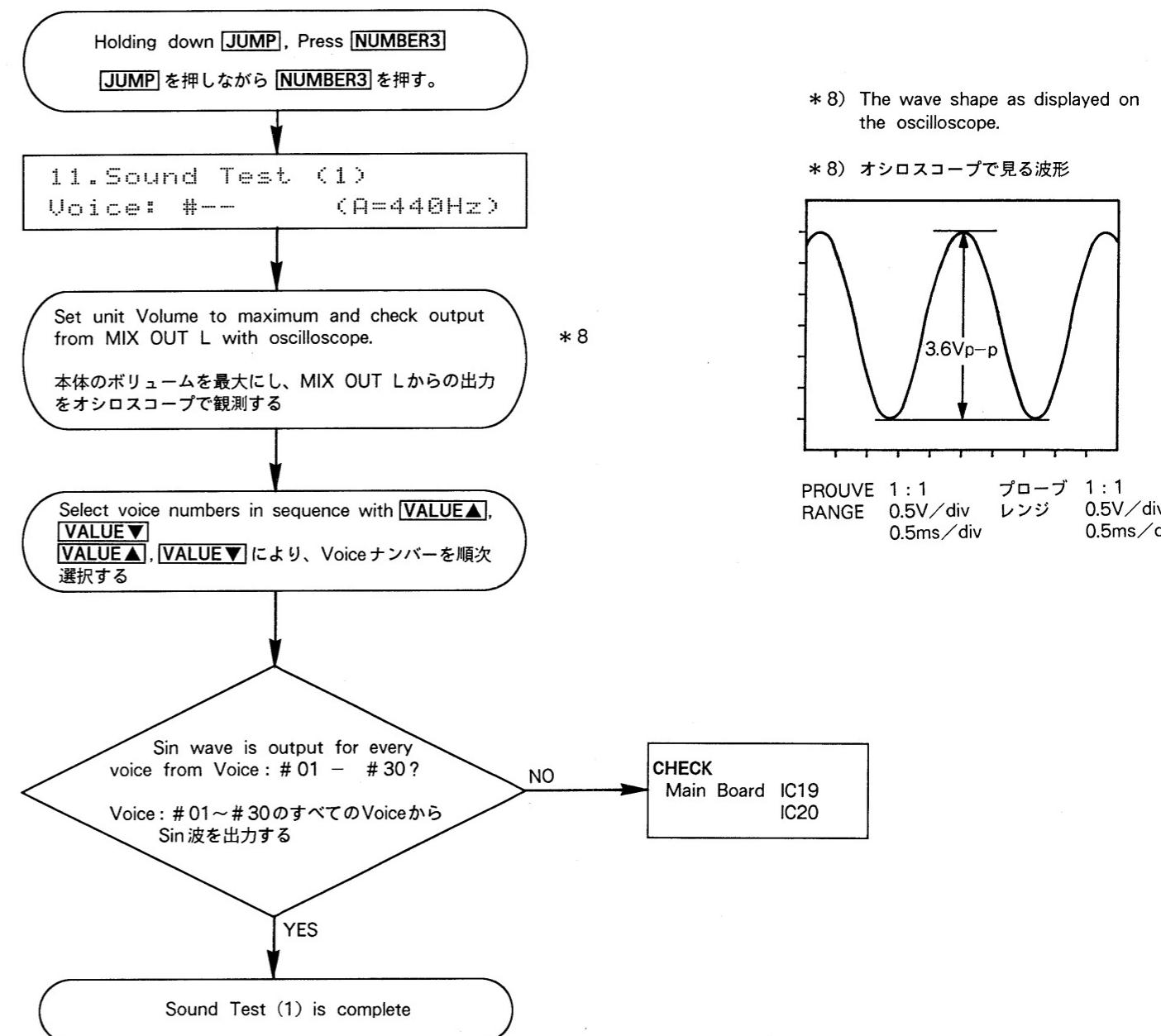
9. A/D Test (2)



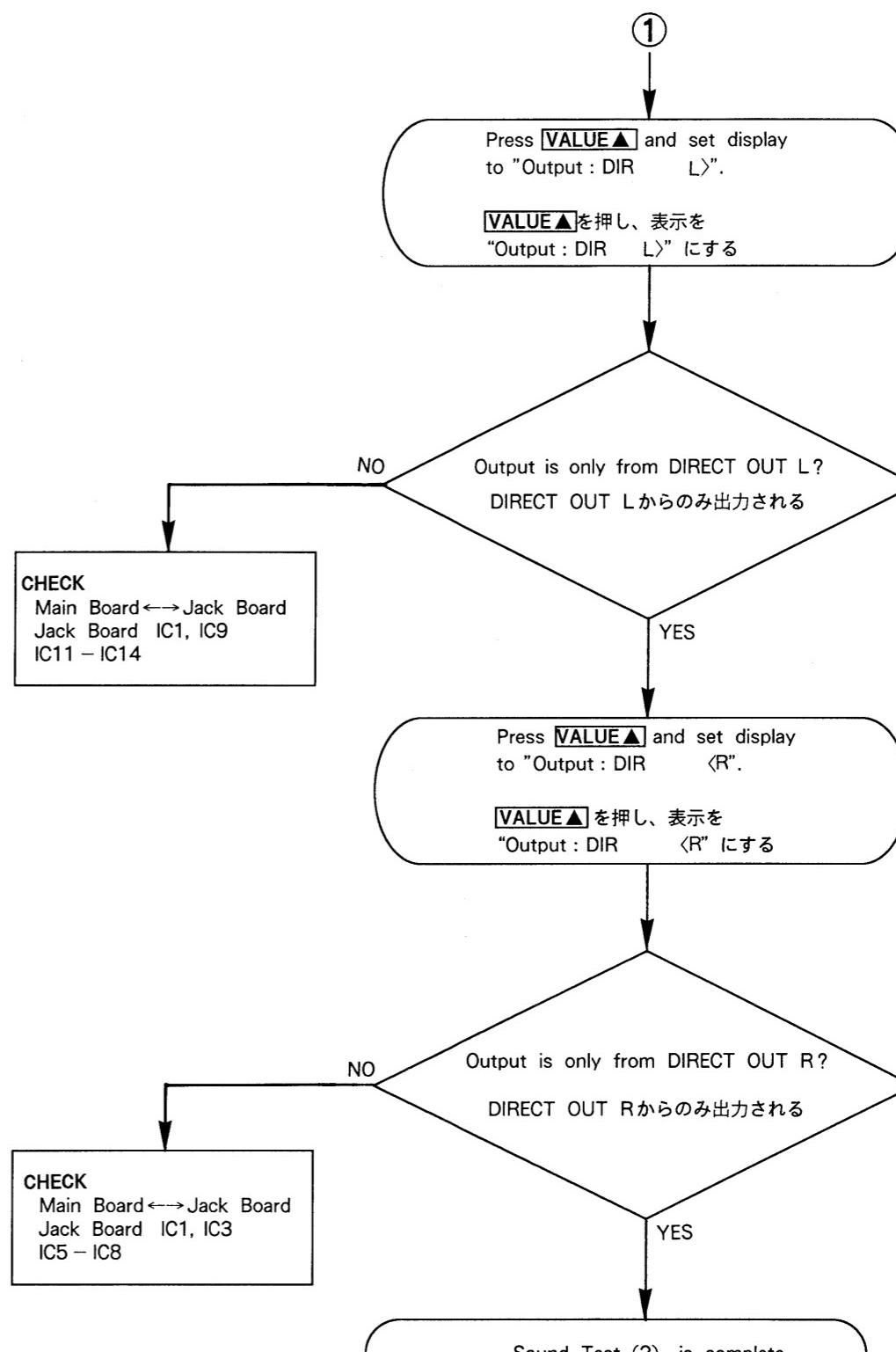
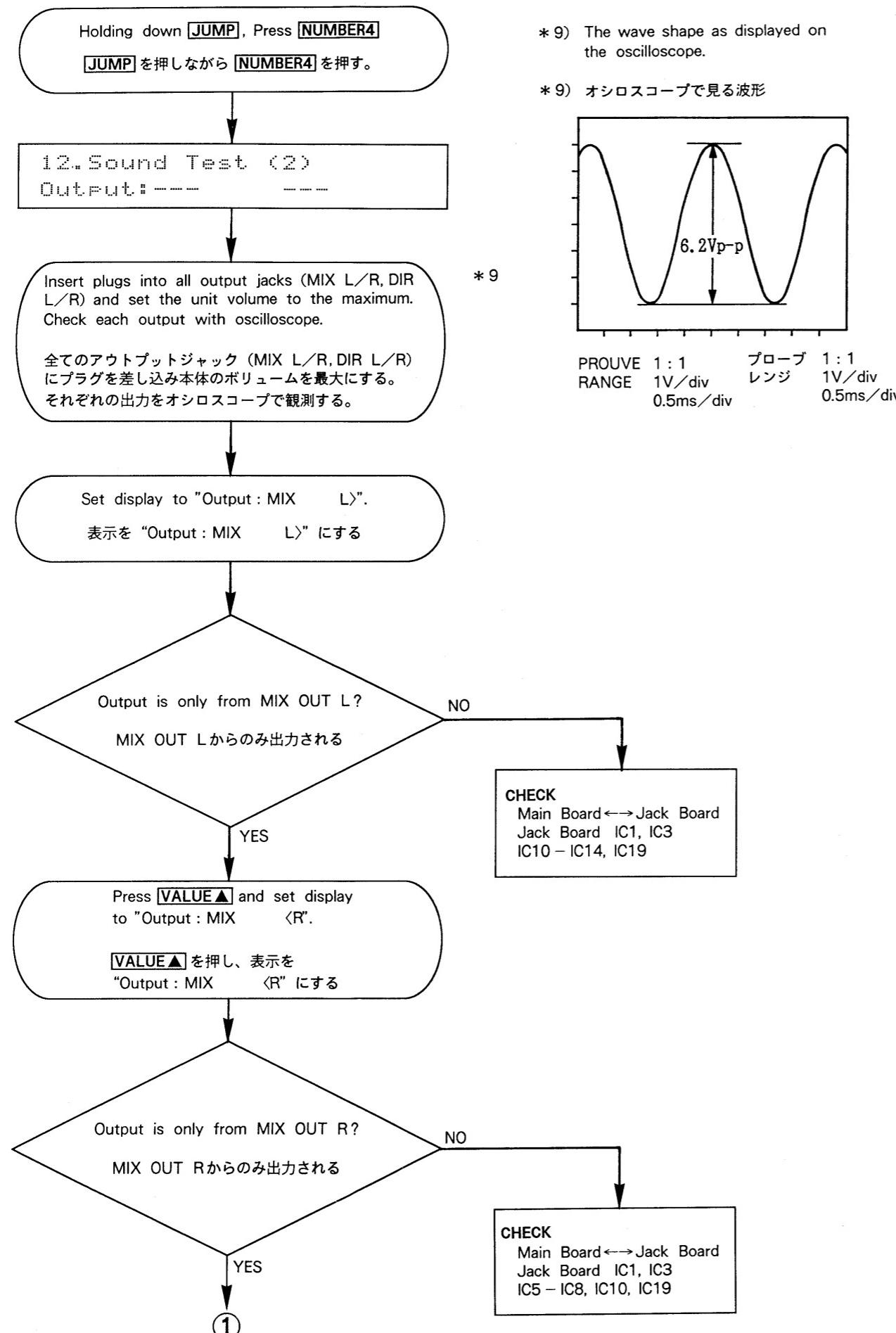
10. MIDI Test



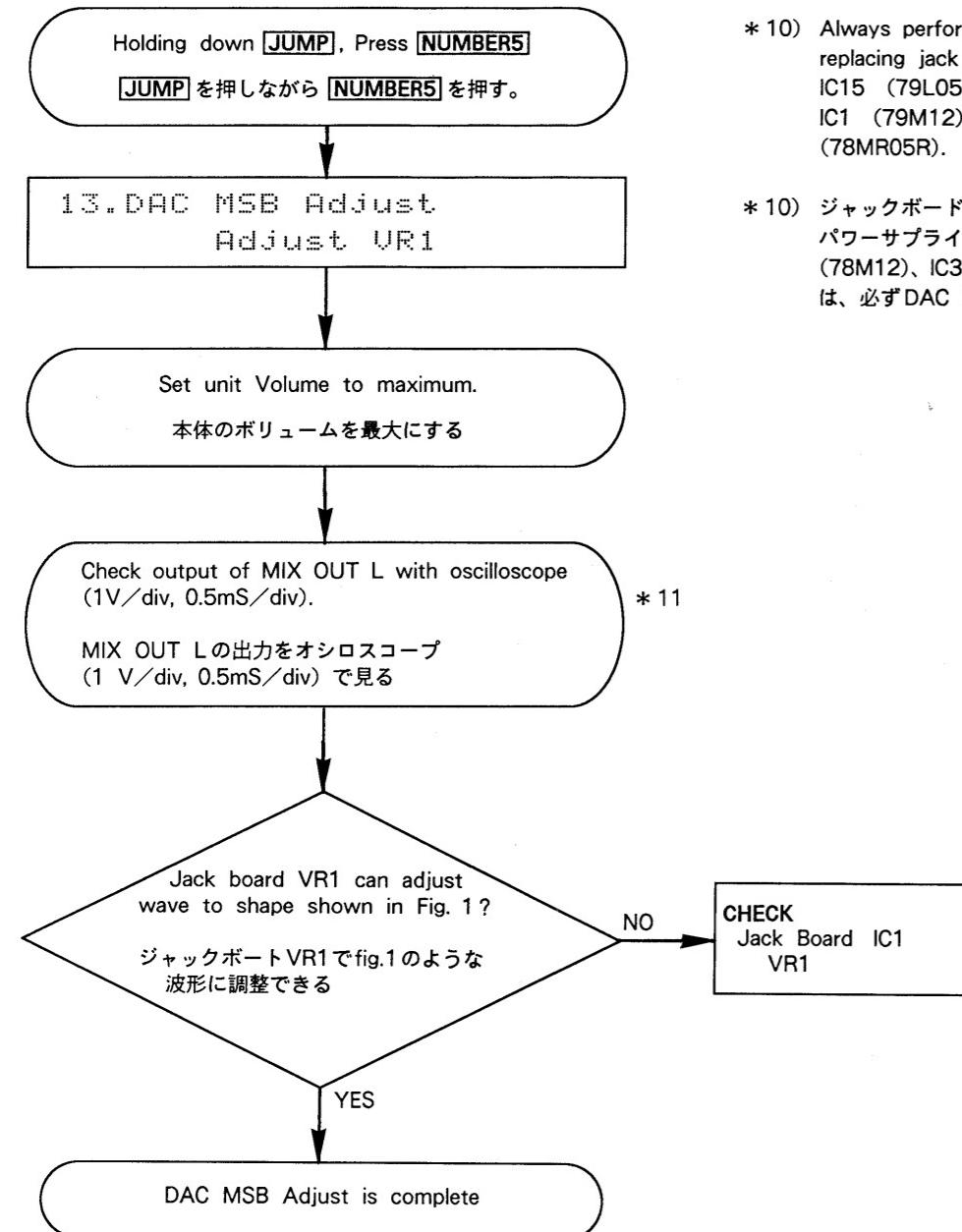
11. Sound Test (1)



12. Sound Test (2)



13. DAC MSB Adjust

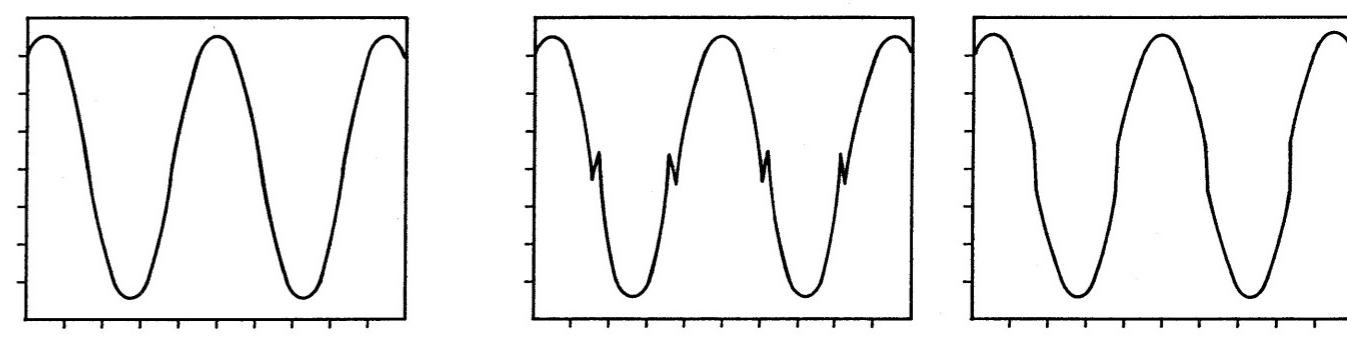


* 10) Always perform DAC MSB Adjust when replacing jack boards IC1 (PCM56) or IC15 (79L05), or power supply boards IC1 (79M12), IC2 (78M12) or IC3 (78MR05R).

* 10) ジャックボードIC1 (PCM56)、IC1 (79L05) パワーサプライボードIC1 (79M12)、IC2 (78M12)、IC3 (78MR05R) を交換した場合は、必ずDAC MSB Adjustをおこなう。

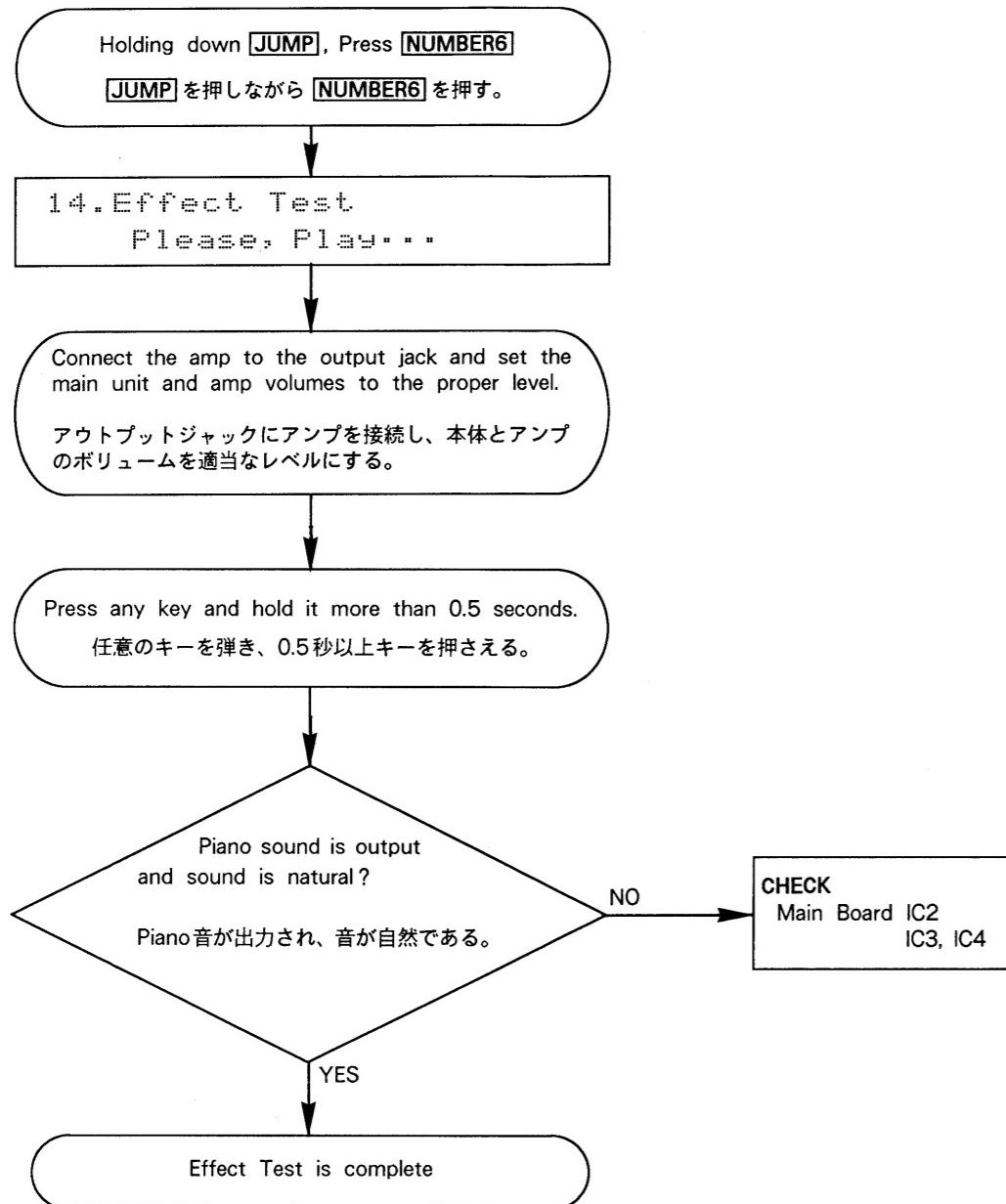
* 11) The wave shape as displayed on the oscilloscope. (Probe 1 : 1 Range : 5mV/div 0.5mS/div)

* 11) オシロスコープで見る波形 (プローブ 1 : 1 レンジ 5mV/div 0.5mS/div)

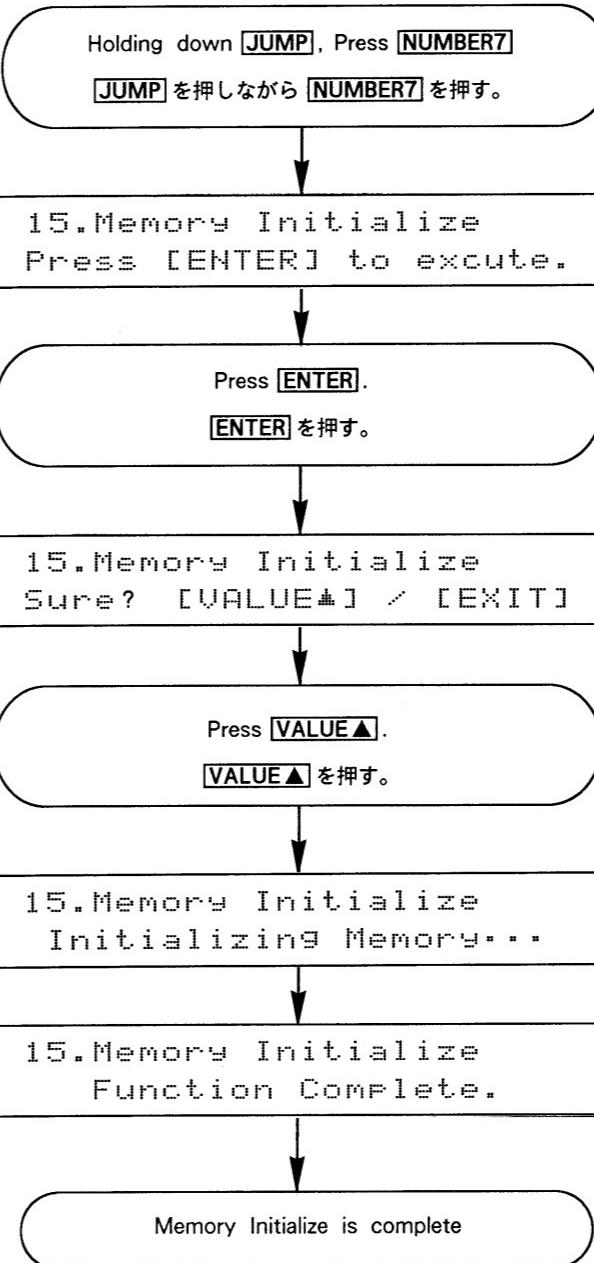


(Since the level is low for the performance of the oscilloscope, the wave shape may contain noise and be difficult to see.)
(レベルが小さいため、オシロスコープの性能で、ノイズを含んで波形が見づらくなることがある)

14. Effect Test



15. Memory Initialization

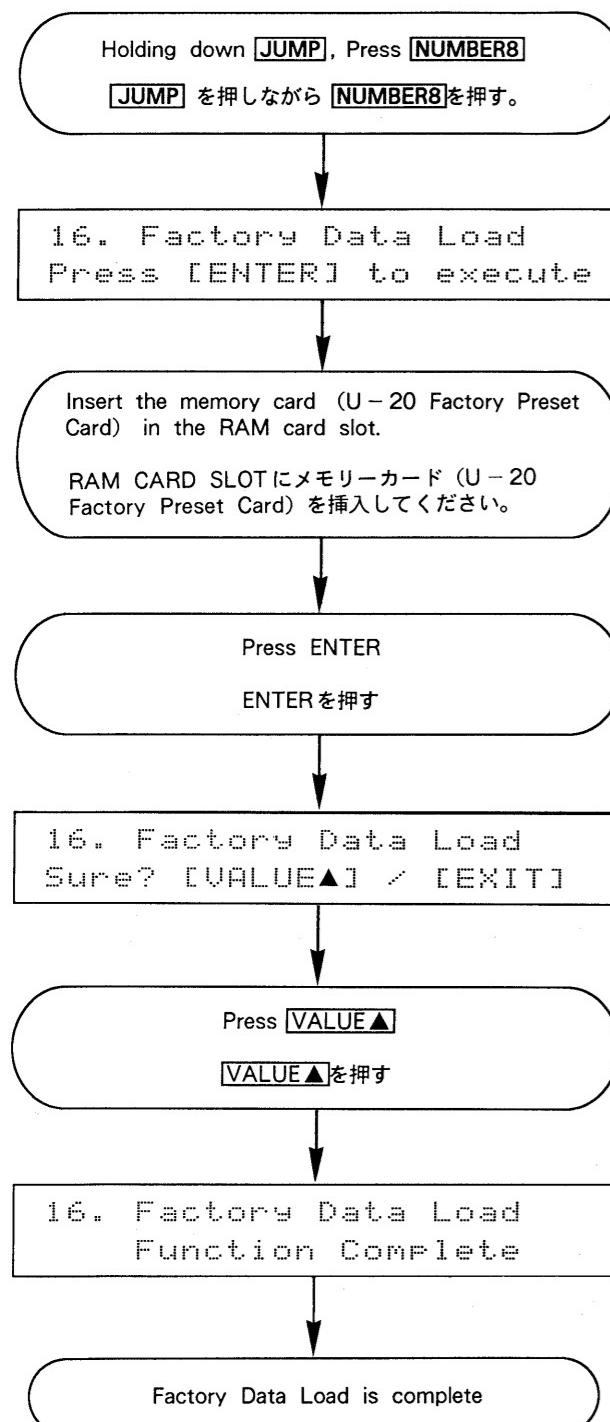


- * 11) Set all temporary contents to the initialization value.
(Data stored in the main unit (internal) will not be initialized.)
- * 11) テンポラリーの全ての内容を、イニシャライズ時の設定にします。(本体 (Internal) に記憶されているデータは、イニシャライズされません。)

- * 12) The contents of the working RAM may be destroyed when replacing the battery (BT1) or working RAM (main board IC5). In this case, perform a Factory Data Load at the same time as Memory Initialize with the procedure shown at left.

- * 12) バッテリー (BT1) や、ワーキングRAM (メインボード IC5) の交換などで、ワーキングRAMの内容が破壊されることがあります。その場合は、左記の手順により、メモリーのイニシャライズと同時にファクトリーデータのロードを行います。

16. Factory Data Load



* 13) The contents of the working RAM may be destroyed when replacing the battery (BT1) or working RAM (main board IC5). In this case, perform a Factory Data Load at the same time as Memory Initialize with the procedure shown at left.

* 13) バッテリー (BT1) や、ワーキングRAM (メインボードIC5) の交換などで、ワーキングRAMの内容が破壊されることがあります。その場合は、左記の手順により、メモリーのイニシャライズと同時にファクトリーデータのロードを行います。

* 14) A RAM Card (M-256E) is used for the memory card, but an OTP ROM Card (M-256N) can also be used. If the OTP ROM Card (M-256N) is used, the message "RAM Card Battery Low!" may be displayed! However, the factory data can be loaded by pressing [ENTER] and then [VALUE▲].

* 14) メモリーカードには、RAM Card (M-256E) を使用しますが、OTP ROM Card (M-256N) を使用することもできます。OTP ROM Card (M-256N) を使用した場合には、"RAM Card Battery Low!" と表示したままになることがあります。[ENTER]を押し、[VALUE▲]を押すと、ファクトリーデータのロードを行います。

Program ROM Replacement Procedure

プログラムROMの交換手順

Follow the work procedure below in order to perform the work safely.

安全に作業を行う為に、以下の作業手順に従ってください。

1) Turn OFF the power supply switch and remove the power supply cord. Turn over the U-20 unit, loosen (1) 15 screws and (2) 5 screws and then remove the bottom cover from the unit. (Fig.1)

1) 電源スイッチを切り、電源コードを抜きます。
U-20本体を裏返し、①ネジ15ヶと②ネジ5ヶをゆるめて、ボトムカバーを本体から取り外します。(図-1)

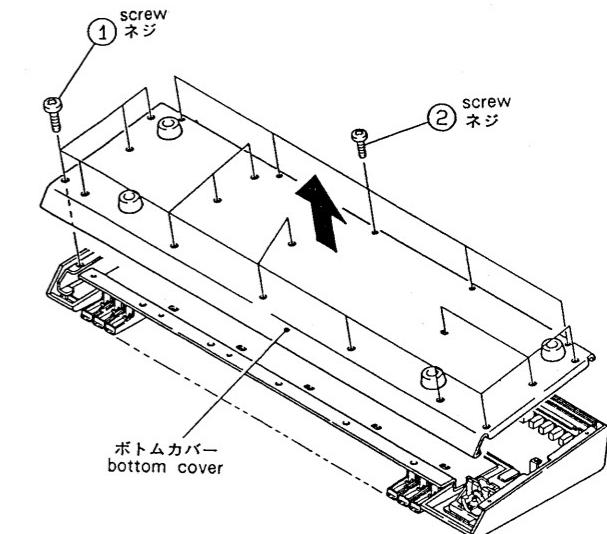


Fig.1
(図-1)

2) Loosen (3) 2 screws (short), (3) 2 screws (long) and (5) 1 screw on the rear panel and remove the MIDI board from the panel. Remove the wiring (12 pin) of the jack board and place the MIDI board on the jack board. (Fig.2)

2) パネルリヤー部の③ネジ(短)2ヶと④ネジ(長)2ヶと⑤ネジ1ヶをゆるめMIDIボードをパネルからはずします。
JACKボードのワイヤリング(12pin)をはずしてMIDIボードをJACKボードの上にのせます。(図-2)

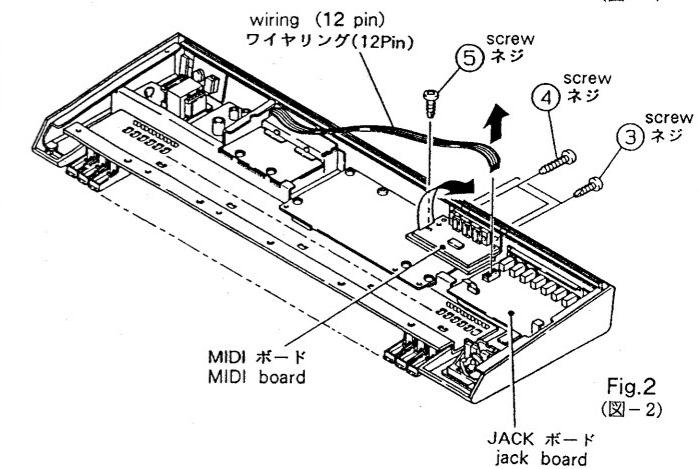


Fig.2
(図-2)

3) Loosen (6) 3 screws on the rear panel and (7) 3 installation screws on the main board and remove the main board from the panel and keyboard angle. Place the main board face up and to the keyboard side so that the part surface is visible. (Fig.3)

3) パネルリヤー部の⑥ネジ3ヶとMAINボードの取り付けネジ⑦3ヶをゆるめてパネル及び鍵盤アングルから外します。
MAINボードの部品面が見えるように鍵盤側に仰向けにします。(図-3)

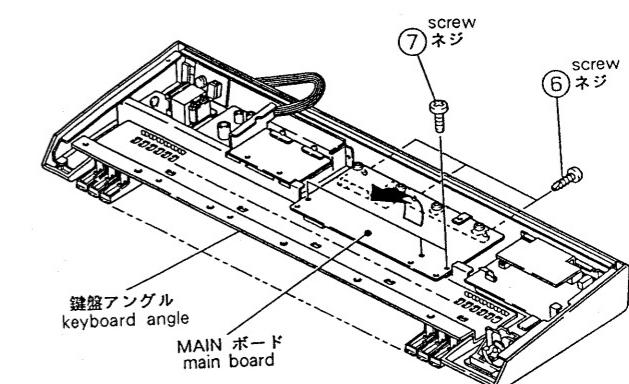


Fig.3
(図-3)

4) When the main board is positioned face up, the program ROM can be seen. First verify that it is the program ROM of IC8 and then remove the ROM from the IC with a tool such as a ROM puller. (Fig.4)

4) MAINボードを仰向けにしますとプログラムROMが見えますのでIC8のプログラムROMであることを確認してから、ROM抜き機等でICソケットから引き抜きます。(図-4)

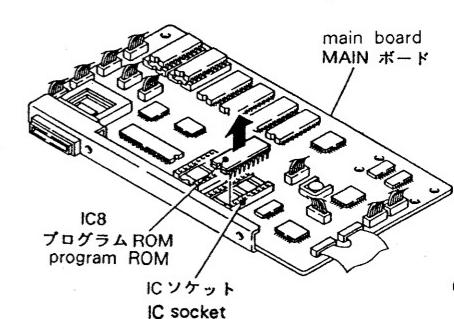


Fig.4
(図-4)

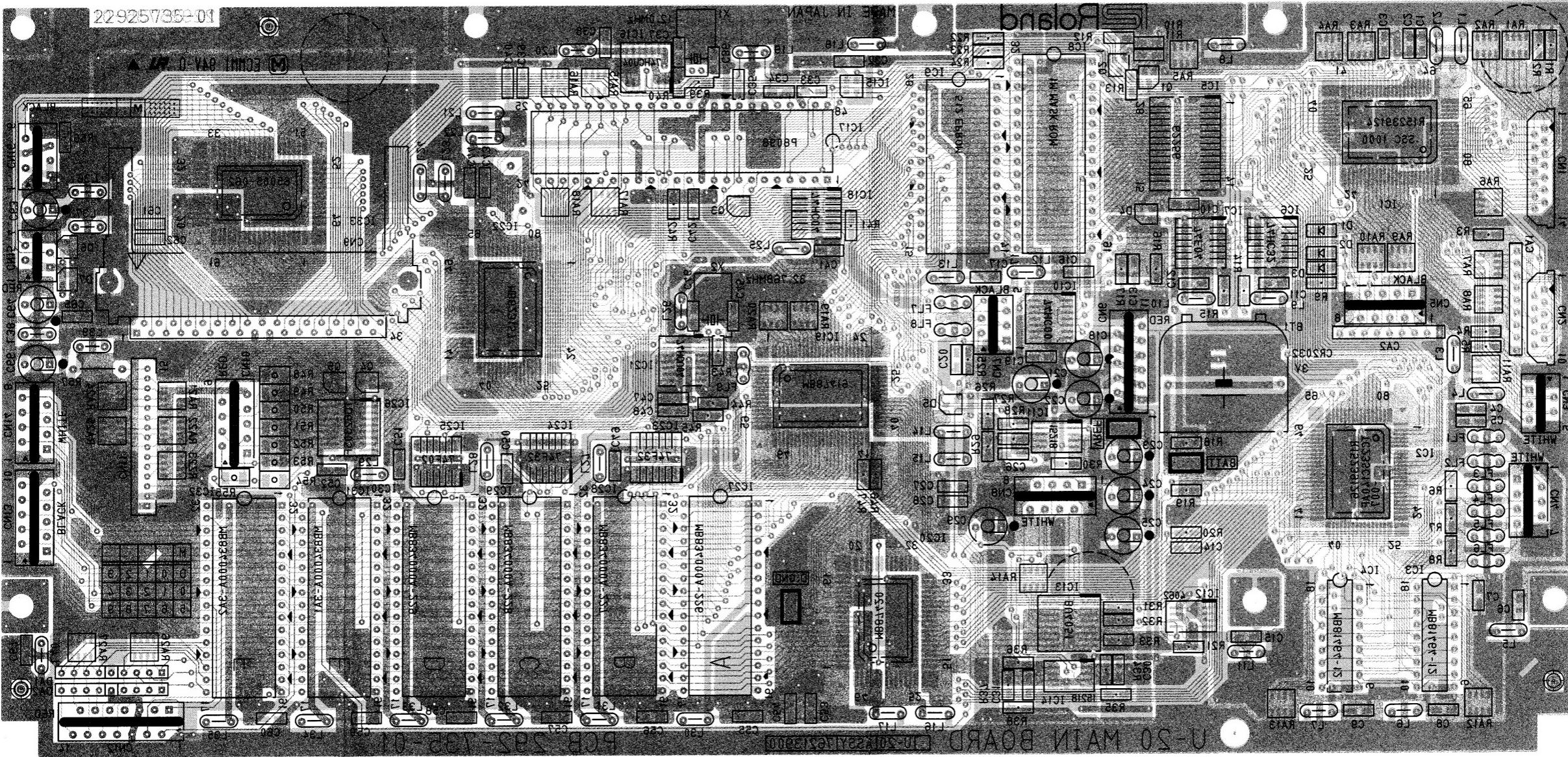
* When reassembling the unit after completion of ROM replacement, follow steps 1) ~ 4) in the opposite sequence for correct assembly.

* 交換作業が終了して組み立てる際は手順を4) ~1) の順に正しく組み立ててください。

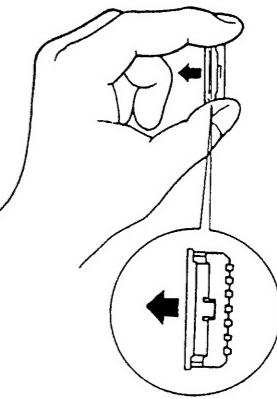
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V

MAIN BOARD

ASSY 7621390000
(PCB 22925735)



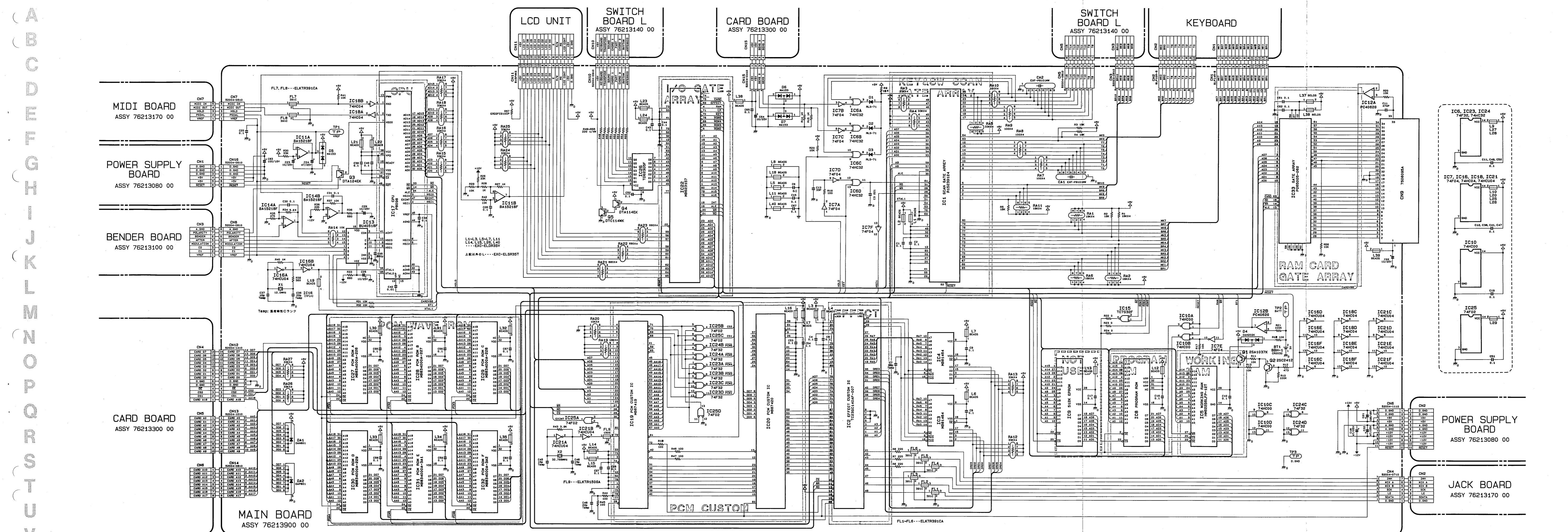
ew from foil Side



IMPROVEMENTS

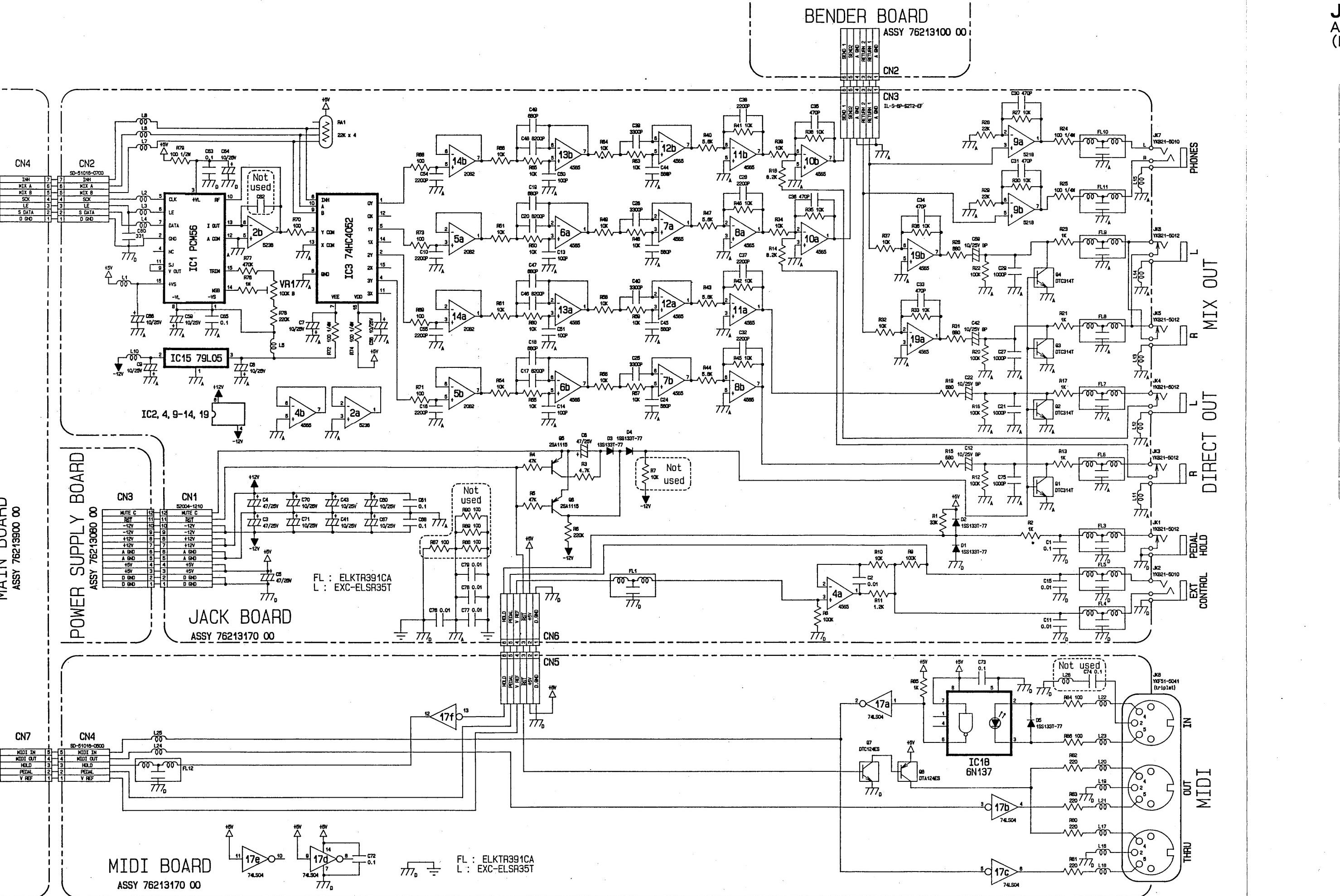
Connection/disconnection of CNs 1 and 2 on main board when removing the cables, grey first, and vice versa.

メインボードCN1, CN2の抜き差し方法
CN1、CN2のケーブルを抜き差しする時は、
グレー色の部分を引き出してから行う事。



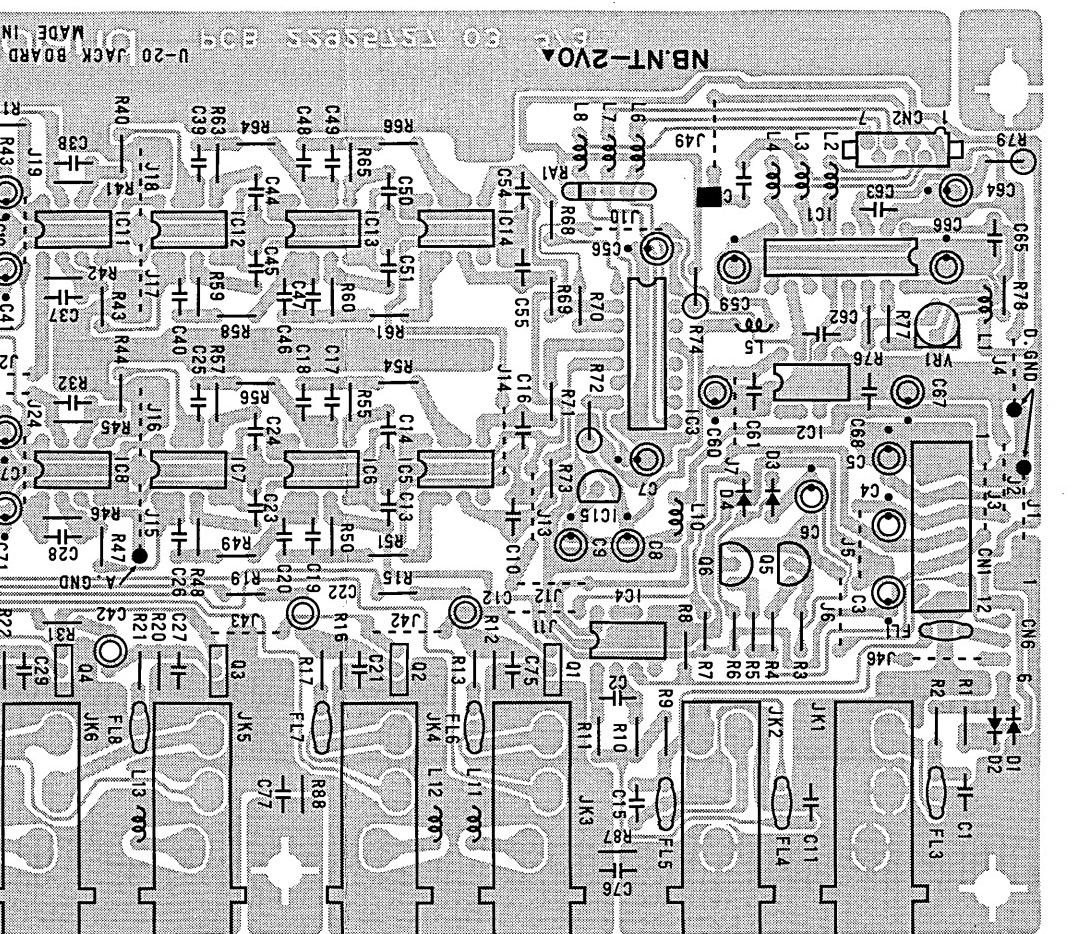
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V

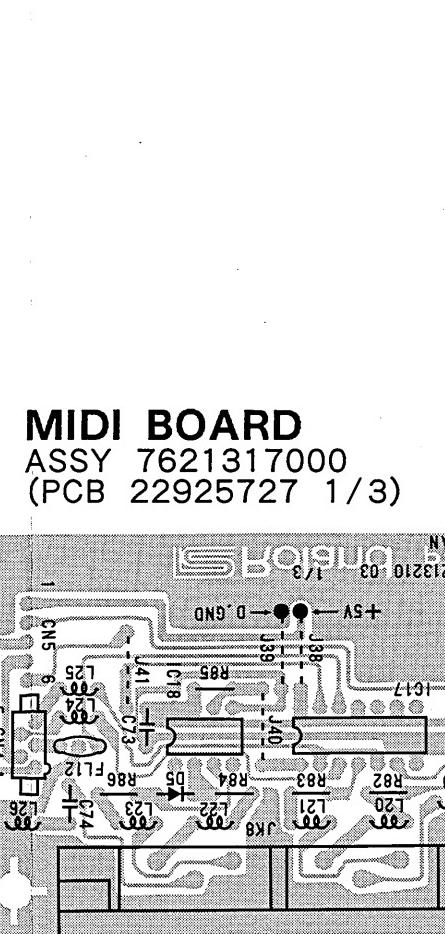


JACK BOARD
ASSY 7621317000
(PCB 22925727 3/3)

There is a mistake in the ASSY number on the PCB
基板上のASSYナンバーに誤りがあります。
Wrong (誤) ASSY 76213210 03
Right (正) ASSY 79213170 00



View from Component Side



View from Component Side

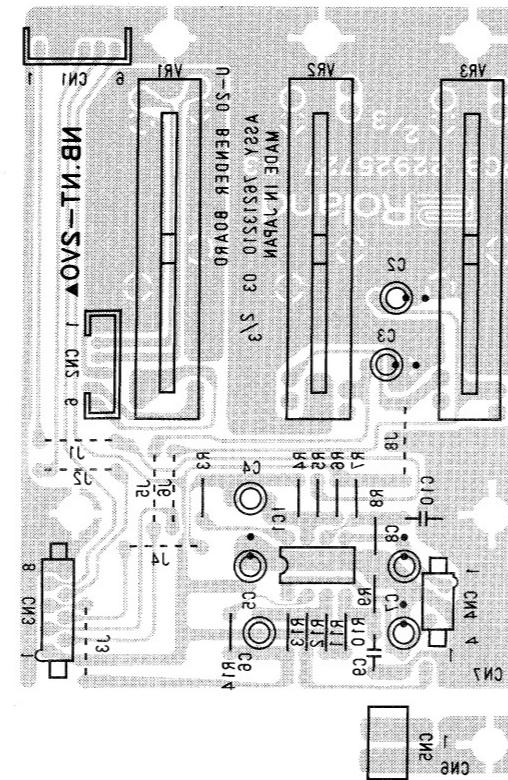
MIDI BOARD
ASSY 7621317000
(PCB 22925727 1/3)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

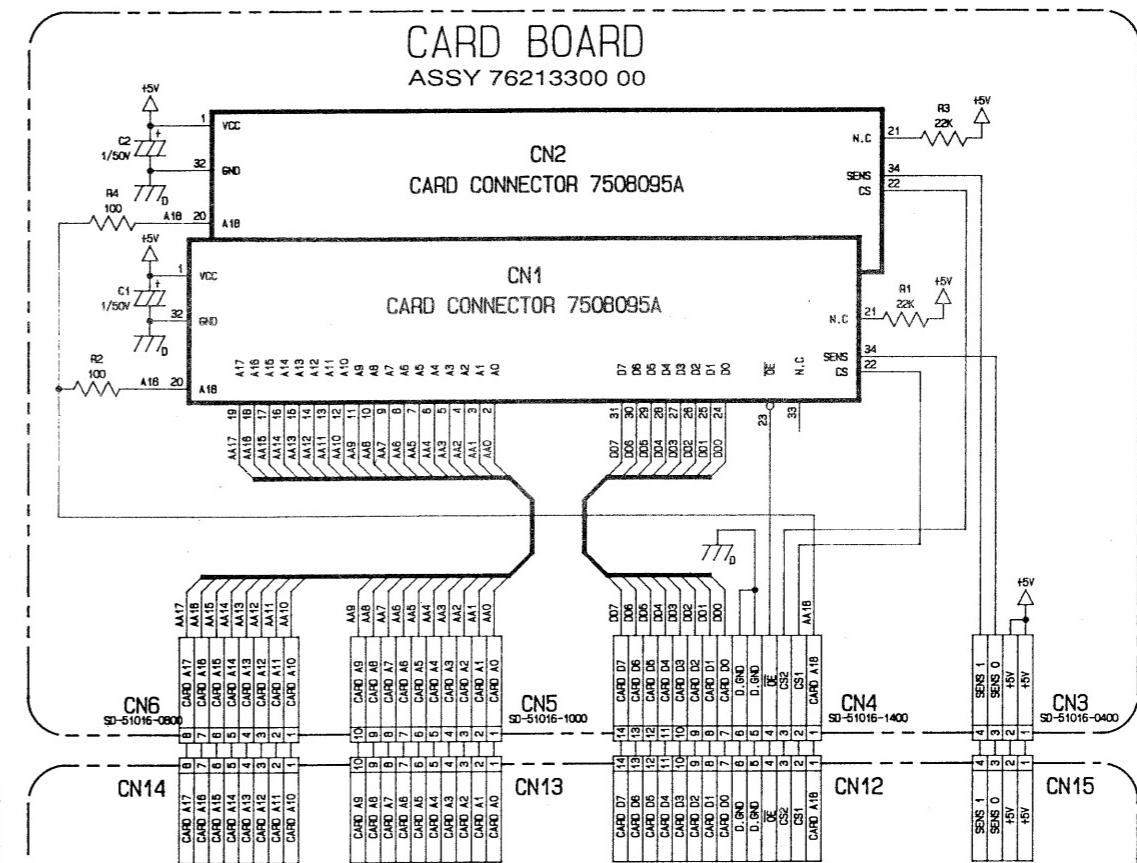
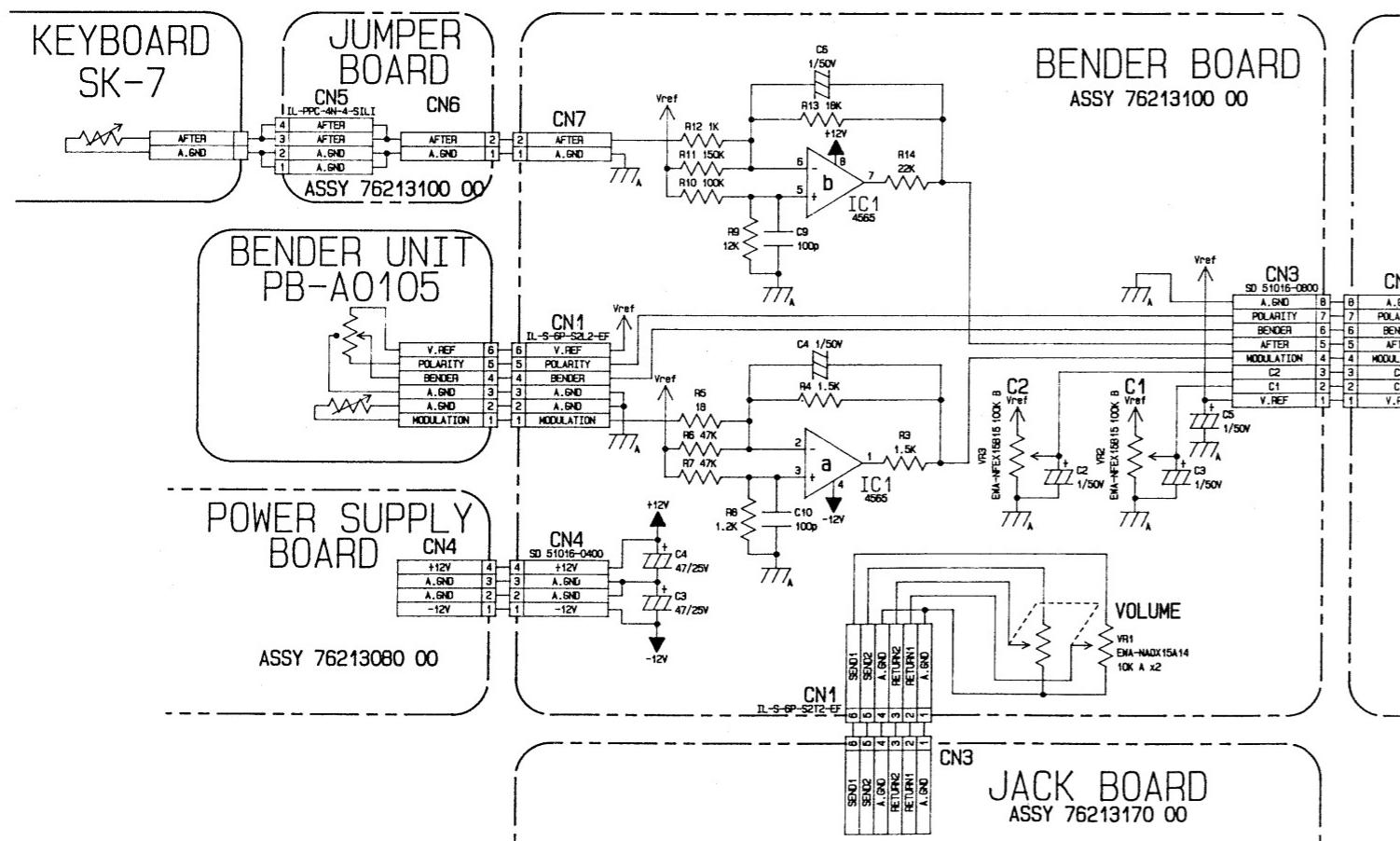
BENDER BOARD
ASSY 7621310000
(PCB 22925727 2/3)

There is a mistake in the ASSY number on the PCB
基板上の ASSY ナンバーに誤りがあります。

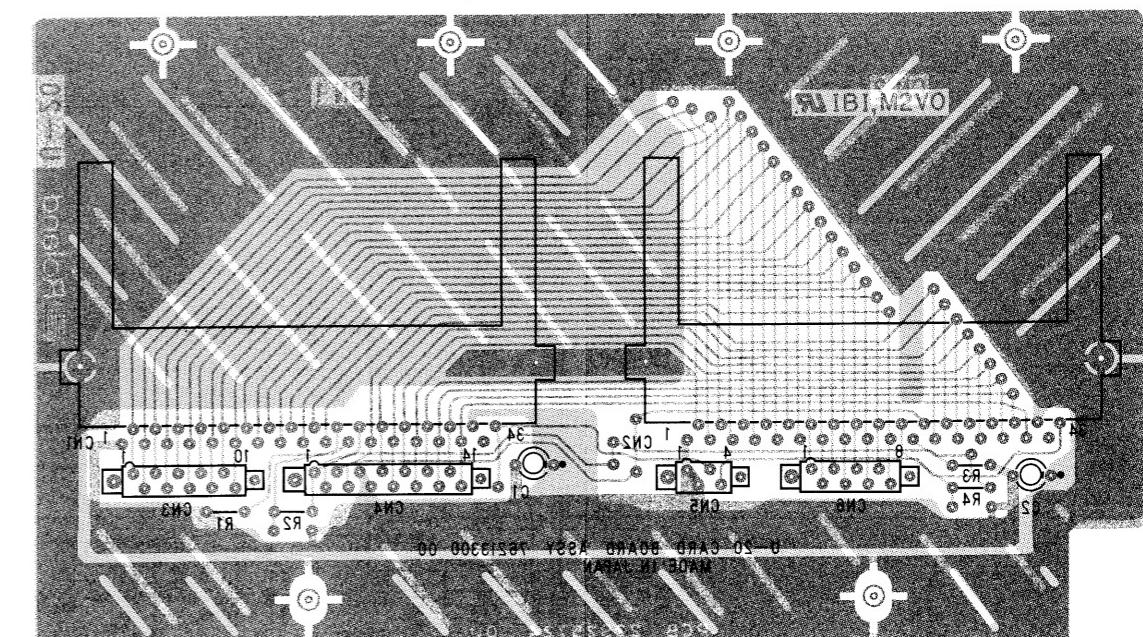
Wrong (誤) ASSY 76213210 03
Right (正) ASSY 76213100 00



View from foil Side



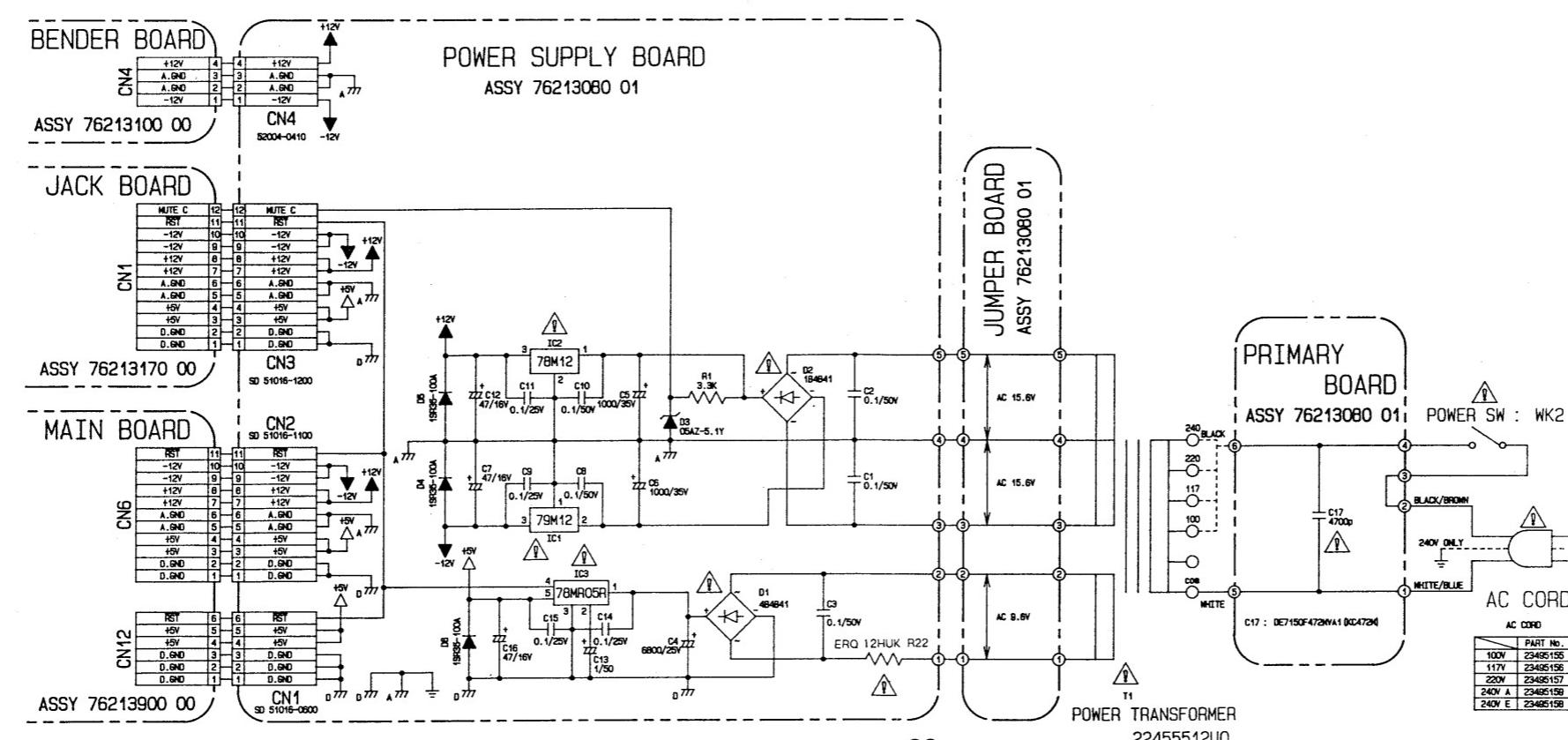
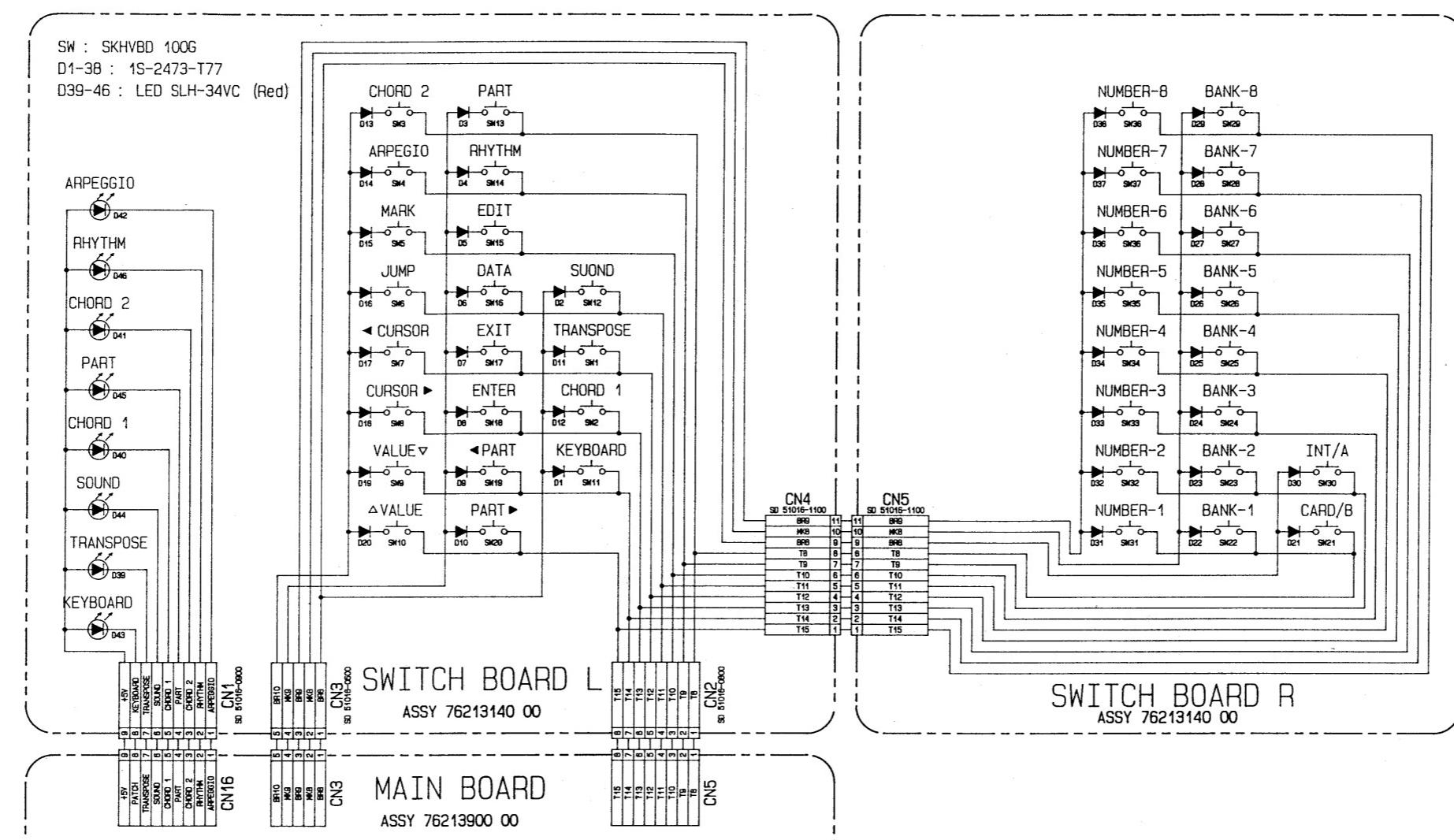
CARD BOARD
ASSY 7621330000
(PCB 22925724)

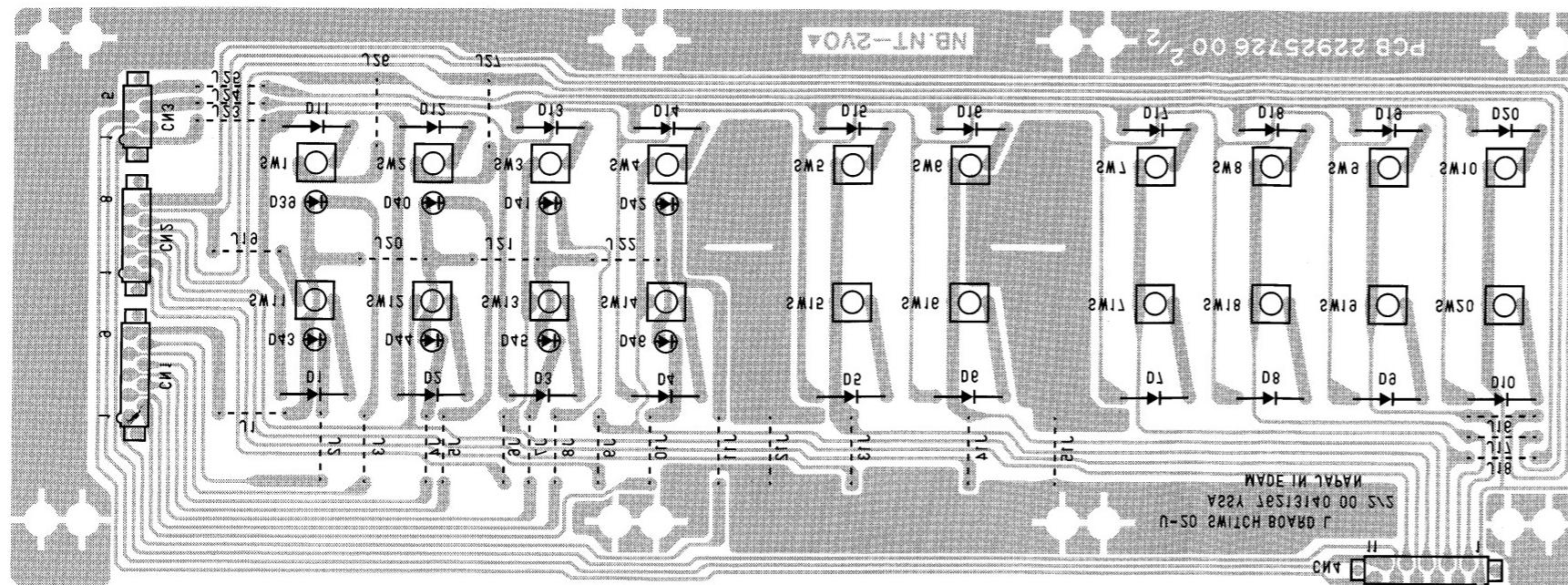


View from foil Side

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

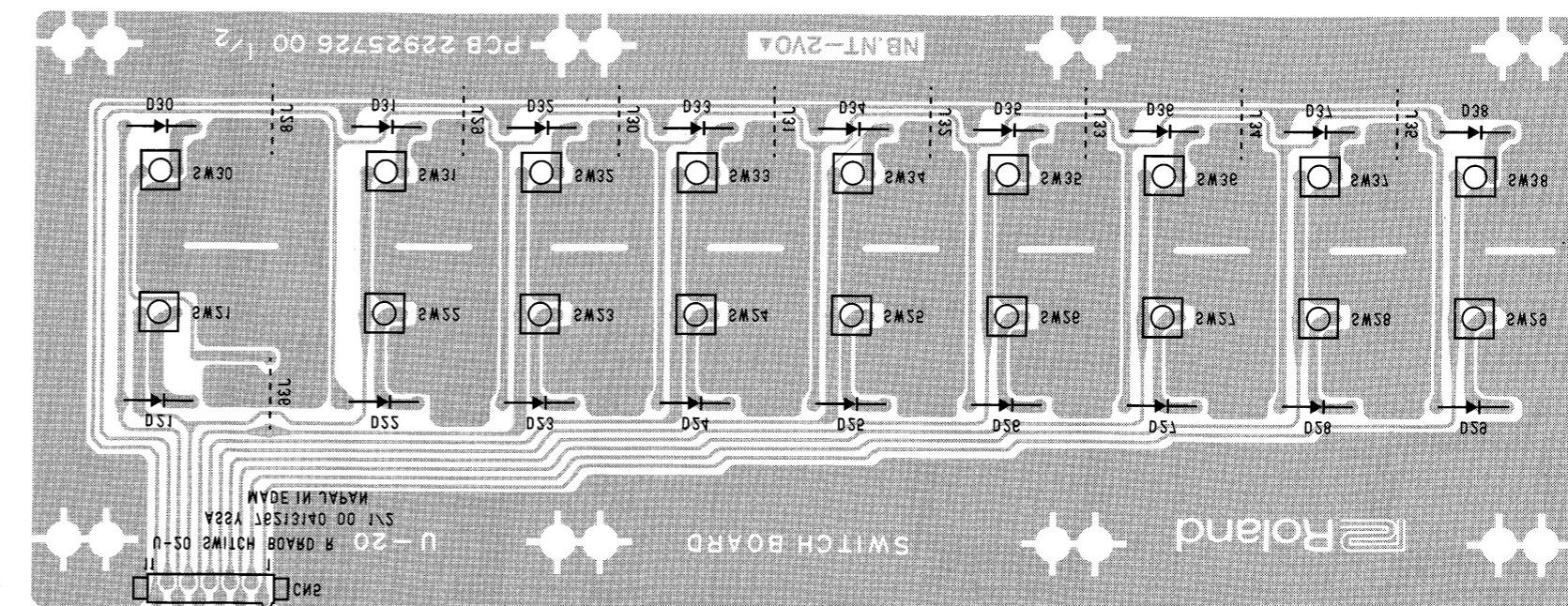
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V



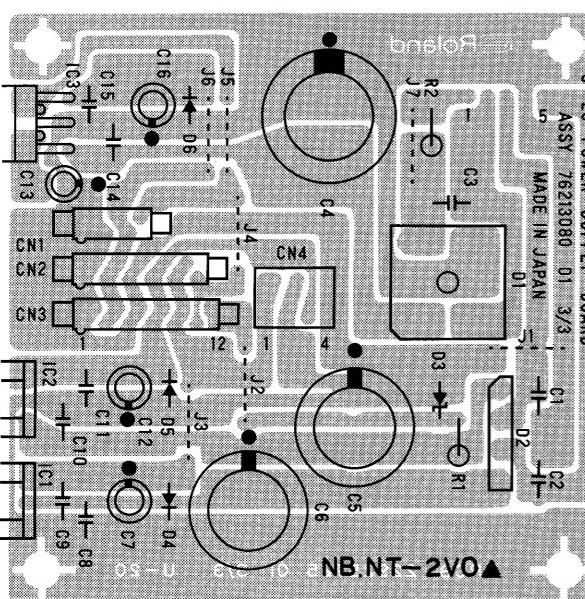
**SWITCH BOARD L**

ASSY 7621314000
(PCB 22925726)
PCB2292572600

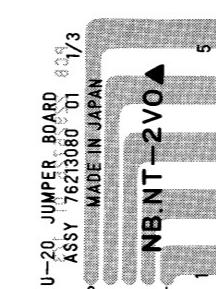
View from foil Side

SWITCH BOARD R
ASSY 7621314000
(PCB 22925726)

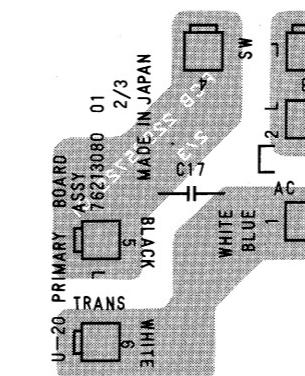
View from foil Side

POWER SUPPLY BOARD
ASSY 7621308000
(PCB 22925725 3/3)

View from Component Side

JUMPER BOARD
ASSY 7621308000
(PCB 22925725 1/3)

View from Component Side

PRIMARY BOARD
ASSY 7621308000
(PCB 22925725 2/3)

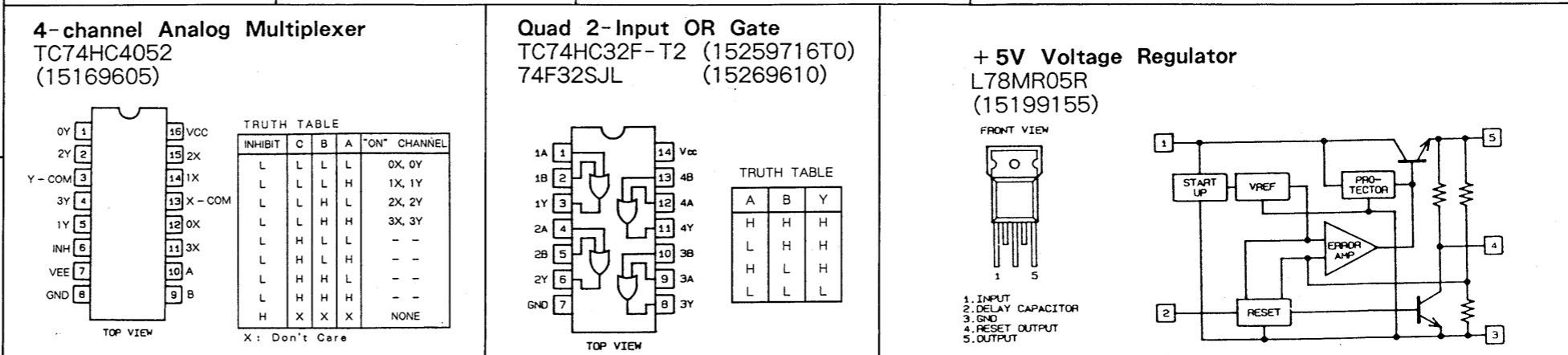
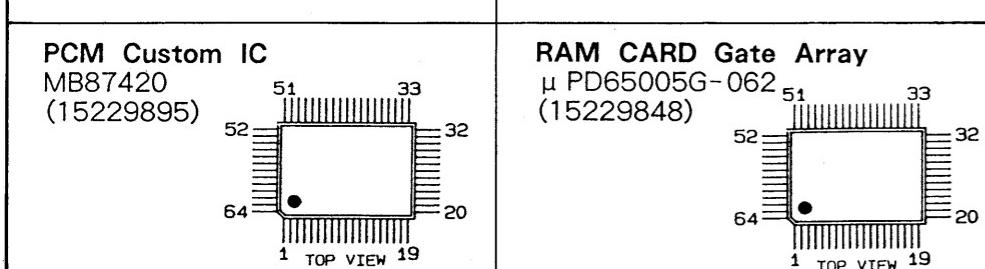
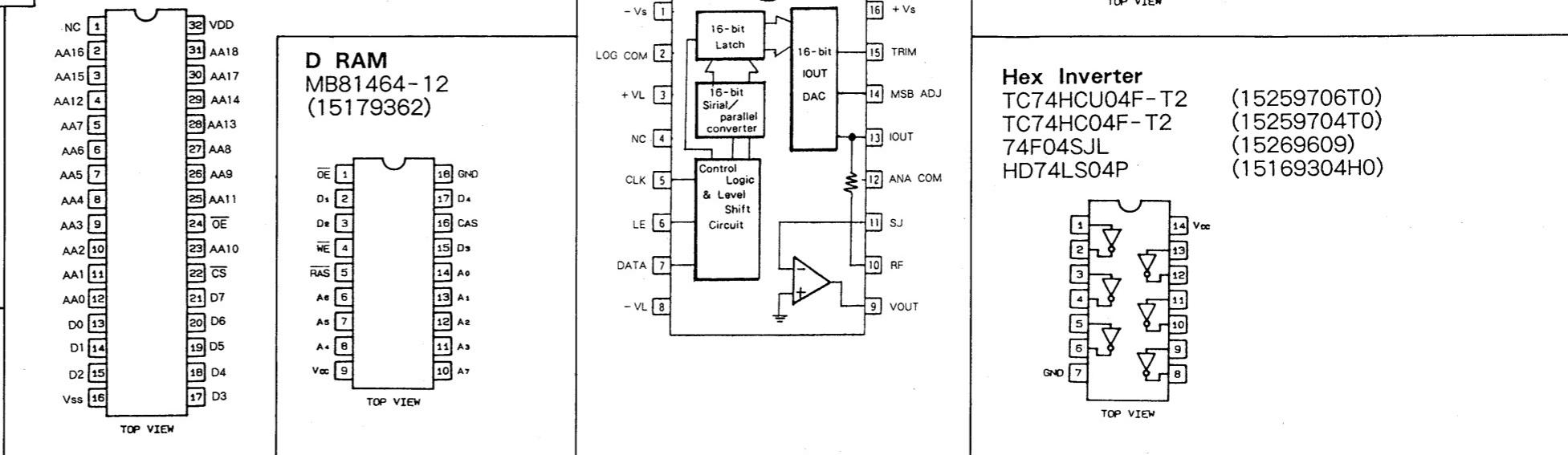
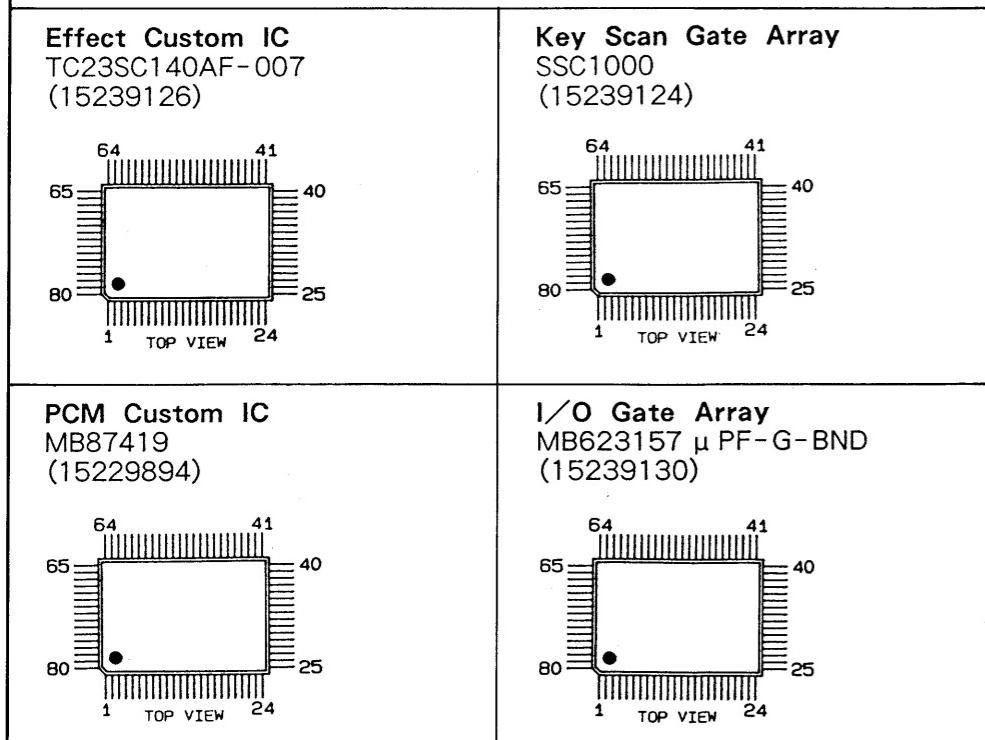
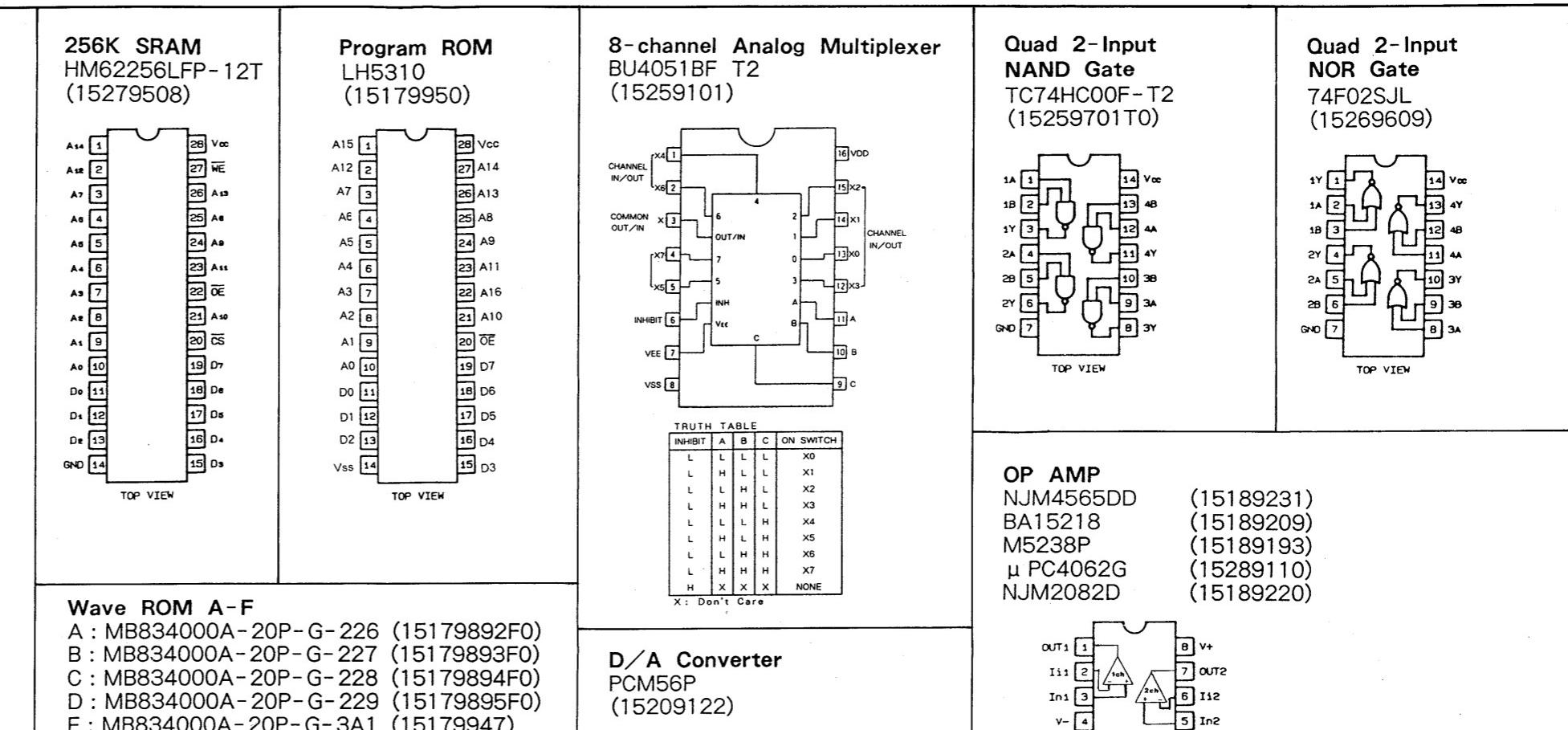
View from Component Side

IC DATA

CPU
P8098
(15179286)

TOP VIEW

PIN NO.	PIN NAME	IO	DESCRIPTION
38	Vcc	-	Main supply voltage (5V). 主電源5V
11, 37	Vss	-	Digital circuit ground (0V). デジタル・グランド
46	VPD	*	RAM standby supply voltage (5V). RAMスタンバイ電源5V
45	VREF	-	Reference voltage for the AD converter (5V). A/Dコンバータの基準電圧
44	ANGND	-	Reference ground for the AD converter (5V). アナログ・グランド
12	Vpp	-	Programming voltage for the future EP ROM parts.
36	XTAL1	I	Input of the oscillator inverter and of the internal clock generator. クロック発振器端子
35	XTAL2	O	Output of the oscillator inverter. クロック接続端子
48	RESET	I	Reset input to the chip. リセット入力端子
39	EA	I	Input for the memory select. メモリー選択入力
34	ALE/ADV	O	Address Latch Enable or Address Valid output. アドレス・ラッチ・イネーブル
33	RD	O	Read signal output to external memory. 外部メモリー呼び出し信号出力
14	WR	O	Write output to external memory. 外部メモリー書き込み信号出力
16	READY	I	Ready input to lengthen external memory cycles. スピードの差いメモリーの使用を可能にする入力端子
3, 4, 5	HSI	I	Input to High Speed Input Unit. 状態変化入力
5 - 10	HSO	O	Output from High Speed Output Unit. 指定時間に output 变化を起こさせる出力端子
40 - 43	Port 0	I	4-bit high impedance input - only port. 4ビット・ハイ・インピーダンス入力専用ポート
13, 47	Port 2	IO	4-bit multi-functional port. 4ビット・マルチ・ファンクション・ポート
25 - 32	AD	IO	Address data bus. 下位8ビット・アドレス・データ端子
17 - 24	A	O	Address bus. 下位8ビット・アドレス端子
1	RXD	I	Serial input. シリアル入力
2	TXD	O	Serial output. シリアル出力



U - 2 0 S E R V I C E N O T E S
E R R A T A & S U P P L E M E N T 正誤表 & 追加情報

U-20 (SK-761-BWCA) PARTS LIST

NO.	PARTS NO.	PARTS NAME	
1	22575254W0	SK-7 NATURAL KEY C/F	257-254
	22575256W0	" E/B	257-256
	22575258W0	" D	257-258
	22575259W0	" G	257-259
	22575253W0	" A	257-253
	22575255W0	" C' / F'	257-255
2	22575261W0	SK-7 SHARP KEY	257-261
3	22815653	SK-7 CHASSIS 6IP	281-653 SK-761 CHASSIS 281-653CA ASSY
4	22155775	SK-7 GUIDE BUSH	215-775 281-677 22815677
5	22265493	SK-7 FELT 6IKEY	
6	22125285	ANGLE	212-285
7	22185236	SK-7 CONTACT LUBBER 12PW	218-236 SK-761 CONTACT LUBBER
	22185237	SK-7 CONTACT LUBBER 13PW	218-237 7621422000
8	7621322000	SK-761-BWCA CONTACT BOARD ASSY	
9	22205309	SK-761 CONNECTOR HOLDER	220-309
10	23165695	SK-761 CA-01 AFTERTOUCH ASSY	
11	22175203	SK-7 SPRING	217-203
12	22135430	SK-761 STOPPER	213-430
13		TAPPING SCREWS 3X6 BI	☆
14		NYLON RIVET NRP-355	☆

